REPORT RESUMES

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ASSESSMENT OF SOME NEWLY DESIGNED EDUCATIONAL MEDIA FOR THE SELF-TEACHING OF YOUNG CHILDREN IN SCHOOL AND AT HOME.
BY- BECK, LESTER F. AND OTHERS
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THE READING PROGRESS OF APPROXIMATELY 600 FIRST-GRADE PUPILS IN 25 CLASSROOMS IN PORTLAND, OREGON, WAS REPORTED. CLASSROOMS WERE SUPPLIED WITH SELF-TEACHING MATERIALS, NO MATERIALS, OR WITH GENERAL INTEREST OR "PLACEBO" MATERIALS. RESEARCH ASSISTANTS VISITED ALL CLASSROOMS WEEKLY. FATHERS AND MOTHERS WERE INTERVIEWED AT THE BEGINNING AND AT THE END OF THE PROJECT TO LEARN THEIR VIEWS ABOUT THE WORK OF THE SCHOOL, AND INDIRECTLY TO DETERMINE THE EFFECT OF THE EXPERIMENTAL MATERIALS ON PARENT ATTITUDES. FIVE GROUPS OF FIVE CLASSES EACH WERE BALANCED FOR TEACHER AGE AND EXPERIENCE, URBAN-SUBURBAN LOCATION, SOCIOECONOMIC STANDING, PRIOR KINDERGARTEN EXPERIENCE, AND MEDIA READING READINESS SCORES. THE EXPERIMENTAL DESIGN PERMITTED ASSESSMENT OF THE RELATIVE EFFECTS OF SELF-HELP UNITS USED IN THE CLASSROOM AND AT HOME VERSUS THEIR USE ONLY IN THE CLASSROOM. ALSO, IT PROVIDED A BASIS FOR GAUGING THE EFFECTS OF THE NOVELTY OF MATERIALS ALONE. FINALLY, THE GROUP WITHOUT SUPPLEMENTAL MATERIALS WAS INCORPORATED INTO THE DESIGN TO SERVE AS A BENCHMARK AGAINST WHICH THE EFFECTS OF THE EXPERIMENTAL UNITS AND THE "PLACEBO" MATERIALS COULD BE CONTRASTED. RESULTS SHOWED THAT THE CONTRIBUTIONS OF SELF-TEACHING MATERIALS, WHILE MANIFEST, WERE FAR OUTWEIGHED BY VARIATIONS IN TEACHER BEHAVIOR AND BY PUPIL DIFFERENCES IN READING READINESS, INTELLIGENCE, AND FAMILY BACKGROUND. INDIVIDUAL DIFFERENCES IN PUPIL PERFORMANCE TENDED TO INCREASE AS THE YEAR PROGRESSED. SUGGESTIONS WERE OFFERED ABOUT POSSIBLE WAYS TO HELP TEACHERS HELP CHILDREN ATTAIN A HIGHER AND MORE UNIFORM LEVEL OF READING ACHIEVEMENT IN THEIR FIRST YEAR OF SCHOOL. (HB)

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Assessment Of Some Newly Designed Educational Media For The Self-Teaching Of Young Children In School And At Home

Lester F. Beck, Ph. D.
Principal Investigator

Title VII Project No. 590
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I. INTRODUCTION

This study reports the reading progress of 638 first grade pupils in 25 classrooms, some of which were supplied with self-teaching materials, some with general interest or placebo materials, and some with no special materials of any kind. In some rooms, the pupils were permitted to take the materials home to share with parents and siblings. Research assistants visited all classrooms weekly, conversed with teachers, introduced and checked materials, administered tests, and accumulated use tallies of the experimental materials by the children. Fathers and mothers were interviewed at the beginning and at the end of the project to learn their views about the work of the school, and indirectly to determine the effect of the experimental materials on parent attitudes.

Results of the project showed that the contributions of the self-teaching materials, while manifest, were far outweighed by variations in teacher behavior and by pupil differences in reading readiness, intelligence, and family background. Individual differences in pupil performance tended to increase as the year progressed. From the findings, suggestions are offered about possible ways to help teachers help children attain a higher and more uniform level of reading achievement in their first year of school.

Although psychologists, after years of thought and research, are unable to say for sure just how learning takes place or how best to teach, they have isolated some of the conditions which produce consistent, desirable forms of behavior, notably immediate reward for appropriate responses and continual knowledge of progress. These conditions, combined with a manpower shortage in the teaching profession, have stimulated development of a long dormant device known as the "teaching machine." The Zeitgeist of the 1930's, a period of depression and manpower excess, defeated a good idea by Pressey; the Zeitgeist of the 1960's, a period of rapid technological expansion and a manpower shortage in scientific and professional fields, has supported a similar idea by Skinner. Both men developed mechanical devices which a learner can operate by himself to learn planned bodies of knowledge and to test his understanding and retention. The original papers by Pressey and Skinner are presented in the massive compilation on teaching machines and programed learning, edited by Lumsdaine and Glaser (1961) and distributed by the National Education Association.

Advocates of teaching machines and programed learning speak of adaptability to the student's speed of learning, prevention of repetition of errors, and release from drab routines for the teacher. These, plus the very idea of greater responsibility of the student for his own learning, have created interest in adapting machines, programs, and systems to various learning situations and exploring the areas and limits of their use.

The present study is concerned with one area of public school instruction--the first grade--and an adaptation of the teaching machine idea for use by six year olds in their learning to read. It is an investigation of independent study in the first grade. How well can children do it? Do parents and teachers approve and support it? How much does it contribute to the total complex of teaching and learning in the first grade?

The devices used in this study were similar in some respects to the kind of self-help aids in new language laboratories. They included records and record players, slide projectors, stereo reels and viewers--all operated by the children--together with especially prepared coordinated reading-listening-viewing materials designed to help a child help himself learn to read. Signals on the record cued the child to given pictures or printed material on a page of a book. The child could view the stereo pictures as he listened to a story, thus getting an overview of what he was to read for himself later. He could then replay the record and "read" along in the book, using the voice on the record as an aural guide. He could practice for accuracy by listening and reading as often as necessary until he felt ready to read or relate the story to others. He could adapt the study materials to his own speed of progress, correct his own errors, and reach a level of proficiency satisfactory to himself before seeking appraisal by others. Thus, errors were private knowledge and only success was public.

The materials are fully described and illustrated in a colored folder distributed by the publisher and enclosed as an addendum to this report.

Some of the same materials used in this study--the stereo reels and viewers--were adapted by Feldman, Merrill, and MacGuintee (1960) to stimulate reading in remedial groups and in regular classes, grades 4-8. The pupils wrote stories to accompany the pictures reels. The five participating teachers concluded that the stereo reels were more real to the children than regular book illustrations, that the materials awakened new interests, and that they led to additional collateral reading. To quote the authors, "The enthusiastic reaction of both children and teachers at the Elementary Reading Clinic (Columbia University) indicates that stereoscopic color picture sets, used with attractive and appropriate accompanying text, can be effective and stimulating aids for reading instruction."

Similar conclusions were reported in a study by Witty and Fitzwater (1953) involving the use of films, correlated readers, and tape recorders. Subjects were 159 second grade pupils in six Chicago schools. The first half of the year was used as a control period for comparison with the second half, the experimental period, when four films and associated readers were used. Oral reading of the pupils was recorded and played back for all to hear. An attempt was made to measure relative progress with the California Reading Test, but the test ceiling proved too low for satisfactory assessment. The teachers felt the experiment had helped the children learn to read, that pupil motivation had been higher during the experimental period, and that the oral expression of the pupils had been noticeably improved.

Using projected filmstrips based on classroom readers, McCracken (1954) modified the usual procedures for reading instruction in eight first grade classes over a four year period. His teachers reported heightened interest in schoolwork, livelier class discussions, fewer difficulties in class management, and "happier and more socially confident" pupils because of reading success. When the traditional method of instruction was reinstated in some of the classrooms, the new classes achieved far less than the former experimental classes.

In these various experiments the teacher herself took an active, interested part. She projected the filmstrips, discussed the films, operated the tape recorder, and helped the children compose stories to accompany the stereo reels. The reported changes in pupil behavior may have come about not so much because of the materials, but because of a change in the teacher herself. She was participating in something new and different and was attentive to resultant changes in pupil behavior, however slight. She very likely gave encouragement and approval for favorable pupil behavior that under routine classroom conditions might have gone unnoticed.

Reinforcement learning theory says that children raised on approval will emit those forms of behavior that produce recognition and praise by teachers and parents alike. But to shape behavior in new situations, rewards must come for appropriate exploratory efforts at the start. When teaching becomes a chore, the teacher's sensitivity to pupil effort and change probably declines. Under these conditions, pupils must present gross changes in their behavior to evoke desired praise and approval.

In the present study, the teaching devices could be managed by the children themselves. Their effective use did not require teacher participation. In fact, the materials were introduced into classrooms for independent study in a deliberate attempt to free them from the kind of teacher influence that clouded the findings of McCracken, Witty and Fitzwater, and others. Potentially, pupils using the materials could make substantial gains on their own and draw praise for achievement that otherwise might not have occurred. If the materials were taken home and used there, parents also might help to reinforce the independent study of the child. Expressions of approval need not be regular or systematic, once the child has gotten the knack of independent study. On the contrary, numerous experiments have demonstrated that partial, aperiodic reinforcement produces active behavior which is highly resistant to extinction.

To guide the direction of the study, the questions asked earlier about the impact of the self-teaching materials might better be formulated now as hypotheses to be examined and tested.

1. Children using self-teaching devices (correlated booklets, records, stereo pictures) will show greater gains in reading than children not using such devices.

2. Children using self-teaching devices both at home and at school will show greater gains in reading than children using the devices only in the classroom or not at all.

3. Parents whose children bring self-teaching materials home will perceive their children as making more rapid progress in school and will

show a more favorable active interest in the work of the school and the teacher than will parents of children who do not take such materials home.

4. Teachers with self-teaching materials in their rooms will regard the materials with favor and will perceive their pupils as making faster progress than teachers not having these materials for classroom use.

II. RESEARCH DESIGN AND PROCEDURES

Selection of Classrooms

From a large number of urban and suburban schools in the Portland (Oregon) area, 25 first grade classrooms in 25 schools were chosen for this study. Attention was given to the number and sex of pupils in each class, kindergarten experience, age and experience of the teacher, urban-suburban location of the school, the socio-economic level of the area served by the school, and willingness of first grade teachers and their principals to participate in the project. Classes with fewer than 20 pupils or a disproportionate sex ratio were eliminated. A full range of teacher age and experience was sought. Schools were scattered geographically to draw from various socio-economic levels and to reduce likelihood of teacher interaction.

Five groups of five classes each were balanced for teacher age and experience, urban-suburban location (three urban to two suburban in each group), socio-economic standing, prior kindergarten experience and for median reading readiness scores. The socio-economic factor was based at the outset on estimates by the school principals. Balance on this factor was confirmed later from education and occupations reported in questionnaires completed by parents of participating children.

The research design was simple and straightforward, calling for one strict control group (Group 1), two "placebo" control groups (Groups 2 and 3), and two experimental groups (Groups 4 and 5). Group 2 and Group 4 used the provided materials in the classrooms only, but Group 3 and Group 5 used them both in school and at home. The five groups, each consisting of five classrooms, were treated as follows:

Group 1 Strict control, (C_1). N = 133

No special materials of any kind were introduced into these rooms. These classes are coded 21-25 in this report.

Group 2 Partial control, (C_2). N = 124

These rooms were furnished stereo viewers and commercially available reels selected for their interest to first graders. The use of these materials was confined to the classrooms. These classes are coded 16-20 in this report.

Group 3 Partial control, (C_3). N = 125

Pupils in these rooms had the same materials as Group 2, but were permitted to take the materials home as well as use them in school. These classes are coded 11-15 in this report.

Group 4 Experimental, (E_4). N = 122

These rooms had the same stereo reels and viewers as the partial control groups, and in addition received correlated units of reading books, records, and stereo reels. Rooms were supplied with record players and projectors

which six year olds could operate. These materials were available for pupils to use independently or in groups whenever permitted by the teacher. Use was confined to the classrooms. These classes are coded 6-10 in this report.

Group 5 Experimental, (E_5). N = 134

These rooms had the materials and equipment described above. In addition to using them at school, the children were encouraged to take them home evenings and weekends. These classes are coded 1-5 in this report.

The general experimental design permitted assessment of the relative effects of self-help units in the classroom (E_4) versus units used both in the classroom and at home (E_5). The design also provided a basis for gauging the effects of novelty of materials alone--the C_2 and C_3 groups. Finally, the C_1 group which had no supplemental materials was incorporated into the design to serve as a benchmark against which the effects of the experimental units and the placebo materials could be contrasted.

Materials

The two experimental groups (E_4 and E_5) were given correlated units of self-study materials at biweekly intervals from November to May. The units consisted of illustrated reading books, stereo reels which illustrate the texts and from which the book illustrations were adapted, voice recordings of the text, and, in some cases, variation on the text set to music. Unit titles, in order of distribution, and their difficulty levels are:

Title	Grade Level
Goldilocks	Pre-primer
Ugly Duckling	Primer
Mother Goose	Primary
Three Little Pigs	First
Little Red Riding Hood	Primary
Sounds and Music	First
Rhythms	Second
Fun with Pets	First
Sleeping Beauty	Second
Fun at the Zoo	Second
The First Music	Second
The First Music Notes	Third

Each classroom with the unit materials was equipped with several small, individual record players, some with earphones; a large record player with four listening jacks and earphones; stereo viewers; and a two-dimensional projector with a small screen for projecting the stereo reels. In all cases, the children learned to operate the equipment themselves and did so whenever they used the materials as illustrated in Plate 1. Small canvas bags with convenient hand straps were supplied to the "take home" classrooms (E_5) to facilitate carrying books, records, and viewers

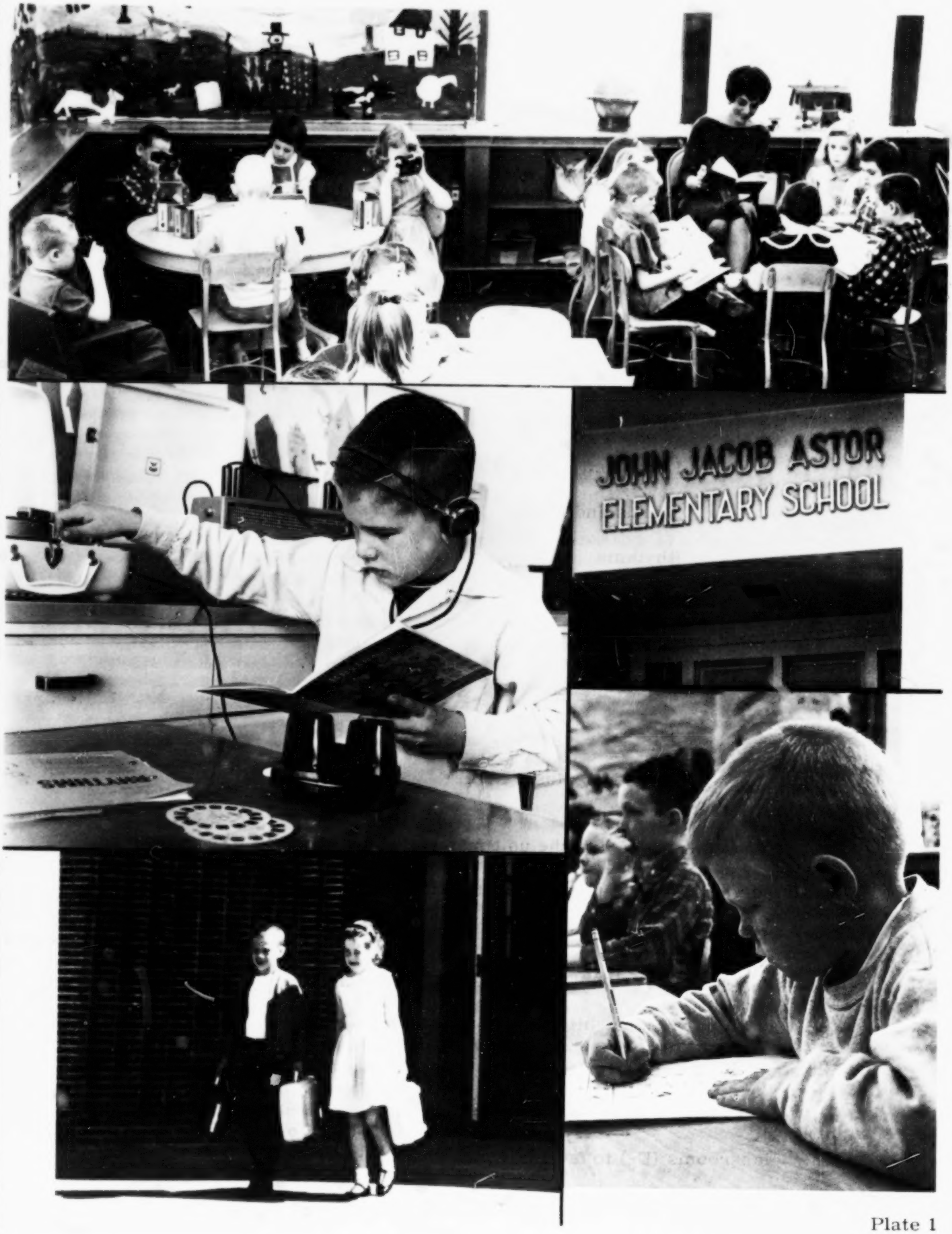

JOHN JACOB ASTOR
ELEMENTARY SCHOOL

Plate 1

back and forth between home and school. The record players were small, lightweight, attractive, and easy for the children to carry.

The stereo reels and viewers provided for C_2 and C_3 groups were regarded experimentally as "placebo" materials to control for novelty effects. The reels were introduced at biweekly intervals, the same as the self-teaching units. The reel packet titles, in order of distribution to the classes are:

Bugs Bunny
Cherokee Indians
Wonders of the Deep
Night Before Christmas
Rudolph, the Red Nosed Reindeer
Snow White and the Seven Dwarfs
Wild Animals of Africa
Moon Rockets
Donald Duck
Lassie
Wild Birds
Bambi
Peter Pan
Children's Zoo
Performing Animals

The C_3 classrooms were supplied with bags, the same as the E_5 classrooms, in which to take materials home.

Multiple sets of units and reels were supplied to the classrooms on the basis of one set per six children with more provided as necessary to meet the demand. They were allowed to accumulate in classrooms as long as they were used. As interest in old subjects declined in favor of new materials, all but one set were withdrawn.

Assistants and Testing Schedule

Five research assistants provided the eyes, ears, and hands of the project throughout the year. Their duties were to deliver equipment and materials to the classrooms, keep experimental materials repaired and in good order, assist the teacher in any way requested, observe and write reports of child behavior as related to the experimental materials in the classroom, talk with and listen to teachers to help sustain interest in the project, and help prevent difficulties in the classroom which might be related to the research project itself. While in the classroom they were available as aides to assist the teacher as she might direct. Research assistants also administered all tests used in the study as follows:

Lee-Clark Reading Readiness Test--administered at the beginning of the second month of school.

Lee-Clark Reading Achievement Test, Form A--administered at midyear.

Goodenough Draw-a-Man Test of Intelligence--administered at midyear.

Lee-Clark Reading Achievement Test, Form B--administered at the end of the third quarter.

Lee-Clark Reading Achievement Test, Form A--administered at the end of the school year.

The Goodenough performance test was used in preference to a verbal test of intelligence since it measures the ability to form and retain concepts based upon observation and is relatively free from verbal factors that contribute heavily to both reading readiness and reading achievement (Ansbacher, 1952, Herrick, 1958).

Each of the five assistants was assigned five classrooms for a month at a time and visited each classroom a half day weekly on a regular schedule. Additional trips were made as necessary to introduce new materials, pick up damaged equipment, return repaired equipment, assist the teacher, give make-up tests, and attend special programs involving the children or their parents. With rotation at the end of each month over a period of six months (not counting holiday seasons), each assistant was returned to his first set of schools for the last month.

In addition to duties in the schools, the assistants attended weekly staff meetings for instructions, to discuss the progress of the project, to make suggestions that could come only from direct observers, and to prepare new materials for distribution on schedule. The last two weeks of their employment after schools closed was devoted to personal discussions with the project coordinator to evaluate the year's work individually, to meetings for collective discussion of the data gathered, and to filling out questionnaires on their observations throughout the year.

Parent and Teacher Questionnaires

One of the four hypotheses tested by this research required assessment of attitudes of parents before and after application of the experimental conditions. A review of extant standardized questionnaires failed to reveal any which asked the right questions for this particular study, so one was devised for administration early in the school year. With a few deletions and some additions it was used again at the end of the school year to assess changes in opinions and attitudes, particularly as related to the kind of educational aids which had been introduced into some of the classrooms. The first 29 items were identical both times. (Parent questionnaires are shown in Appendix A.)

In order to secure the highest possible return on parent questionnaires, within a two week period, Portland State College students were employed to take the questionnaires by appointment to individual homes and wait until they were completed separately by mothers and fathers. This assured quick return of the questionnaires and independent opinions by both parents. Interviewers checked for completeness of the questionnaires before leaving each home. By this procedure, parent responses were obtained twice from more than 90% of the childrens' homes.

Three kinds of information were secured from teachers at various times throughout the year: (a) three estimates of reading progress made concurrently with administration of the reading achievement tests, (b) completion of a check list of items concerning the research project at the end of the school year, and (c) response to a "Semantic Differential Scale" relating to impressions of pupils and parents. The methods of gathering this information are discussed more fully in the next section.

III. RESULTS

Objective Test Data

The basic test data, arrayed by school, are presented in Table 1. Means and standard deviations are given for intelligence (IQ), reading readiness (RR), and three consecutive tests of reading achievement (RA_1, RA_2, RA_3), administered at bimonthly intervals during the last half of the school year. On the last line of Table 1 are means and sigmas for each of the measures for the total sample of 638 pupils. Pupils who entered or dropped out of class after the study began were not included in the final sample. The mean IQ for the sample was 108.7 with a sigma of 19.1. The mean reading readiness score was 57.6 with a relatively small sigma of 6.6. On the first measure of reading achievement the mean was 21.1 which rose to 31.3 on the second test and to 38.0 on the third test at the end of the school year. Variability in reading achievement increased from a sigma of 10.1 on the first test to 13.7 on the second test and held relatively constant at 13.5 on the third test. Before discussing the significance of these changes in means and sigmas for reading achievement let us look at the results for the reading readiness test and the intelligence test.

A measure of reading potential (reading readiness) was obtained shortly after the opening of school to provide an indication of cognitive skills acquired by each child during his preschool years at home, and also

TABLE 1

MEANS AND STANDARD DEVIATIONS OF INTELLIGENCE (IQ), READING READINESS (RR), AND READING ACHIEVEMENT (RA_1, RA_2, RA_3)

School Code	IQ		RR		RA_1		RA_2		RA_3		N
	Mean	σ	Mean	σ	Mean	σ	Mean	σ	Mean	σ	
1	112.3	20.6	56.2	7.2	24.9	6.8	33.8	13.1	40.6	11.5	28
2	113.4	18.2	56.0	7.9	19.5	4.8	26.9	9.2	35.4	11.6	27
3	107.0	20.2	57.5	5.0	13.0	4.9	21.5	9.7	27.4	12.4	31
4	105.0	21.4	56.8	7.9	22.7	11.2	32.5	13.3	36.2	15.4	23
5	105.3	21.3	59.8	3.1	27.3	9.9	39.4	13.6	43.0	10.9	24
6	104.6	15.3	60.1	3.6	22.5	11.1	31.1	13.9	35.4	14.7	28
7	107.9	19.8	53.3	9.1	12.3	11.6	18.3	13.5	27.5	15.8	24
8	106.8	19.5	54.7	8.1	17.8	8.3	34.4	11.4	39.1	12.3	25
9	91.9	7.3	59.1	3.0	16.6	5.7	22.8	8.8	35.7	11.3	24
10	113.3	22.3	60.2	3.5	28.0	6.9	37.1	11.8	42.8	11.5	23
11	109.6	21.2	53.3	10.4	13.9	6.6	21.7	10.2	27.9	11.9	27
12	108.8	15.1	59.6	4.7	26.4	7.8	36.4	10.3	40.2	11.6	18
13	112.6	23.4	60.0	3.4	28.2	11.9	34.9	15.9	39.4	15.1	21
14	106.2	17.5	57.0	8.1	15.7	5.5	25.6	10.4	35.5	12.2	27
15	110.3	18.9	56.8	5.8	22.3	10.6	32.1	13.0	40.4	13.6	32
16	110.1	20.7	52.6	8.6	14.0	4.9	22.5	9.5	31.7	12.6	21
17	106.1	19.2	59.3	4.4	21.8	6.4	27.7	11.8	36.8	11.7	28
18	109.9	18.5	59.2	6.6	29.0	10.7	43.6	13.4	48.3	13.1	26
19	109.0	19.4	58.2	4.6	25.9	11.5	36.1	13.6	44.3	12.1	22
20	112.7	14.3	59.6	4.4	34.8	11.5	47.1	9.5	51.6	8.2	25
21	106.2	14.5	54.5	10.0	13.7	4.5	26.7	10.9	35.2	11.7	27
22	111.9	19.7	58.8	4.1	16.7	10.0	26.2	12.0	31.8	13.2	30
23	105.7	14.1	57.9	6.6	22.0	7.9	27.7	13.0	36.7	11.6	24
24	111.9	21.2	59.6	3.6	23.2	7.5	37.4	12.8	44.4	9.4	25
25	115.7	21.6	60.2	2.9	23.2	5.5	40.4	10.0	46.3	6.5	28
Total	108.7	19.1	57.6	6.6	21.2	10.1	31.3	13.7	38.0	13.5	638

to provide a basis for comparing classes at the outset. Since the readiness test was the first experience of nearly all the pupils with objective testing, administration of the test was delayed until the end of the first month of school to give the children time to become adapted to group activities and procedures.

The distribution of readiness scores, shown in Figure 1, is severely skewed with the bulk of the scores at the high end. Twenty-five percent of the 638 pupils made perfect or near-perfect scores (61 to 64), and ninety percent passed more than three-fourths of the items on the test. The quality of performance suggests two things: first, the children had no difficulty with their first objective test, judging from the size of their scores, and second, they were more than ready to profit from formal reading instruction if high readiness scores are an indication. The number of high scores contrasts with the reservations by Herrick (1958) about the ability of first grade children to manage objective tests satisfactorily.

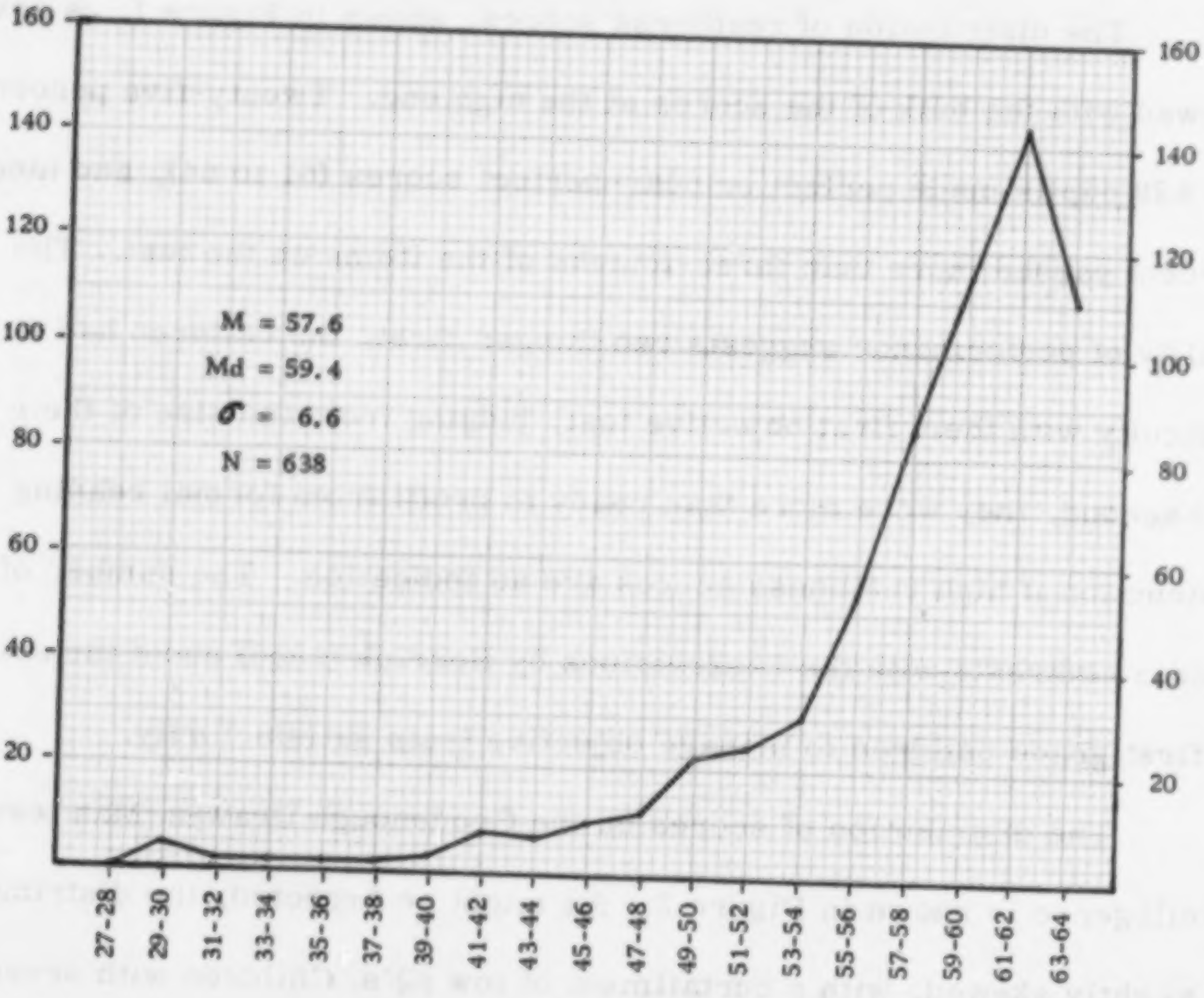
The distribution of scores on the Goodenough Draw-a-Man test of intelligence is shown in Figure 2. As might be expected, the distribution is slightly skewed, with a curtailment of low IQ's. Children with severely restricted intelligence tend to be taught at home or to be assigned to special classes and hence did not find their way into our test sample.

The mean I. Q. was 108. 7, the range 66 to 172, and the standard deviation 19. 1. It is interesting that the mean Goodenough IQ for a sample of 299 children recently tested during their first year of school in Edinburgh, Scotland (MacKinnon, 1959), was 108. 4 with a sigma of 20. 5,

Figure 1

Reading Readiness Scores Earned by Pupils

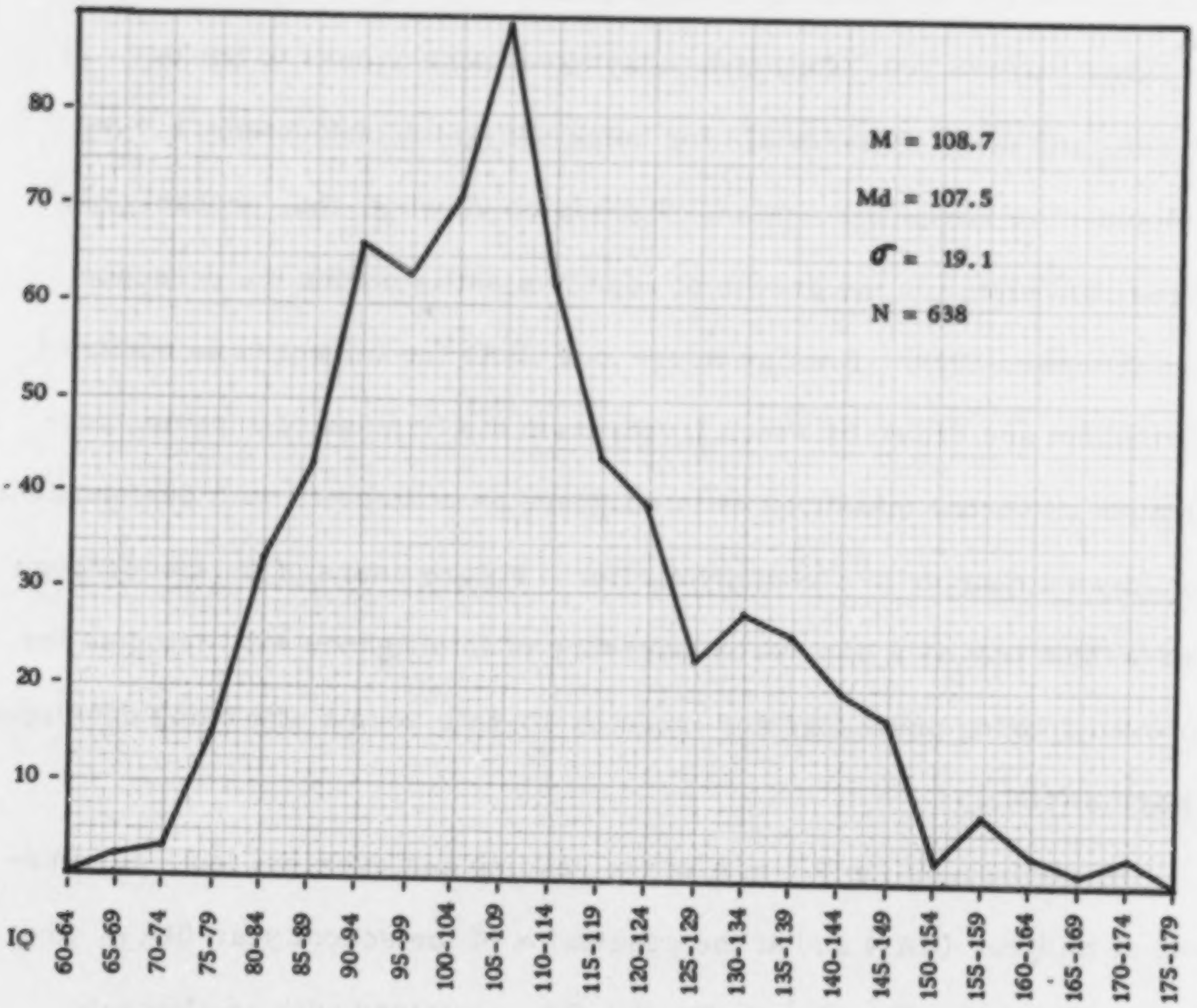
After One Month in the First Grade



Reading readiness measured with the Lee-Clark Reading Readiness Test, standardization edition, 1960 revision, kindergarten and grade 1 level. Total possible score 64.

Figure 2

Distribution of IQ's on Goodenough Draw-a-Man Test



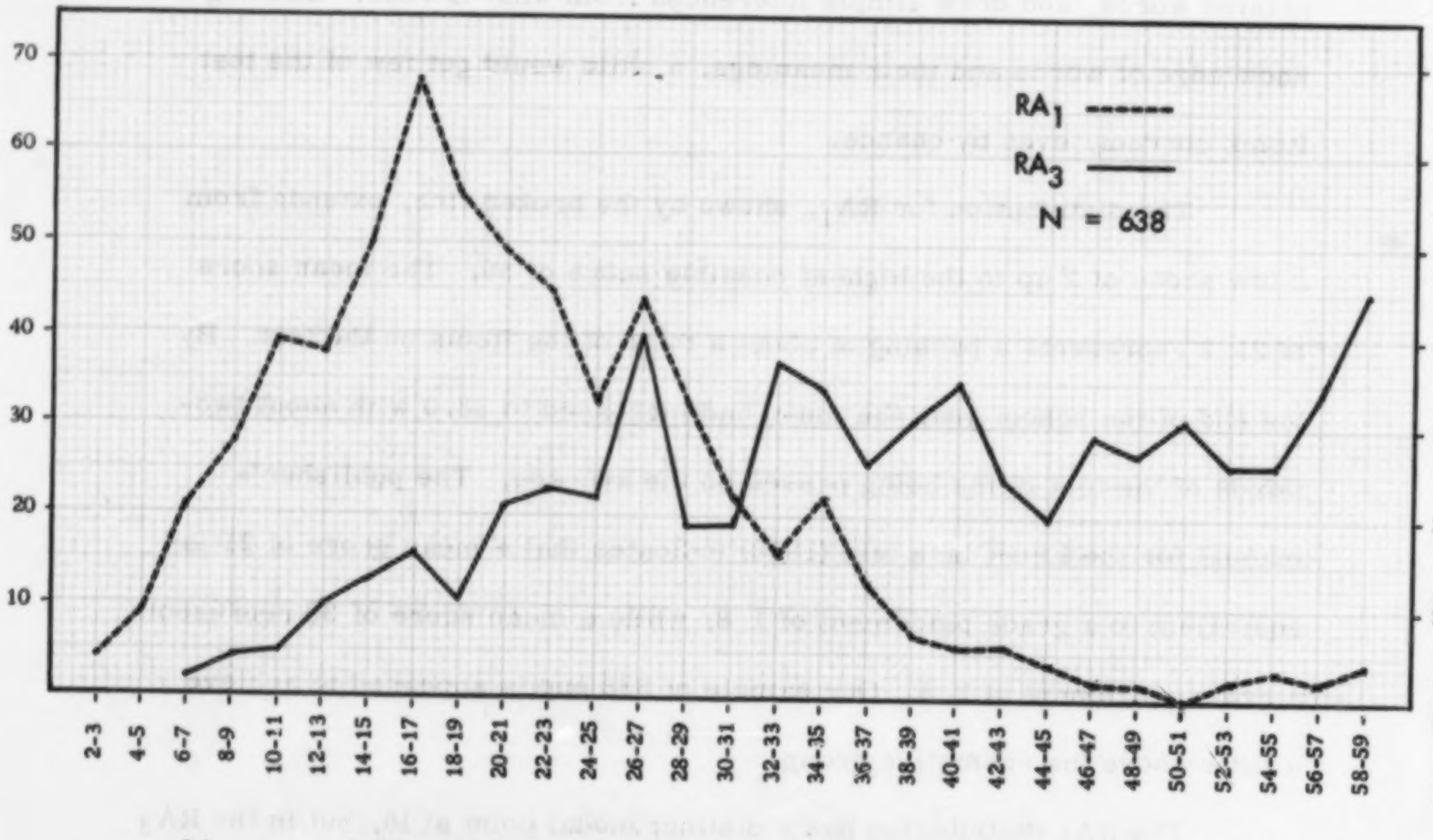
essentially the same as in the current study. The range was from 52 to 152. A much smaller sample of 50 first graders in Nebraska (Rattersman, 1950), attained a mean Goodenough IQ of 115.

Goodenough published her manual with norms in 1926. It is possible that children today have a better conception of the human figure than they did thirty-five years ago, when the test was standardized. This possibility would account for the mean IQ of the MacKinnon study and our own being significantly above 100. Children today have more access to books, pictures, and drawing materials for home use which undoubtedly aid the development of visual perception. Television viewing, too, probably has a significant effect on the growth of cognitive skills during the preschool years (Smythe, 1958). Similar inferences about the impact of an enriched environment are drawn by Finch (1946) from his findings of superior performance on verbal measures of intelligence as contrasted with performance of children a quarter of a century earlier. Future users of the Goodenough Draw-a-Man test as a non-verbal measure of intelligence will welcome the improved scoring procedure and more up-to-date norms now being developed by Harris (1962).

Distributions for Form A of the reading achievement test, administered at midyear (RA_1) and at the conclusion of the school year (RA_3), are given in Figure 3. The distribution for RA_2, obtained with an alternate form at the end of the third quarter of the school year is omitted from the graph since it does not contribute anything unique to the discussion at this point.

Figure 3

Frequency Distributions of Initial and Terminal Reading Achievement Scores (RA_1, RA_3) in the First Grade



RA_1 ----- Achievement scores on Lee-Clark Reading Test (Form A) 1958 revision, given in mid-year. (M = 21.2; Sigma = 10.1)

RA_3 —— Reading achievement scores on same test at end of year. (M = 38.0; Sigma = 13.5)

Total possible score 59.

In order to perform successfully on the reading achievement test a child must be able to recognize and use word meanings in various ways in contrast to the readiness test which assesses a child's ability to detect perceptual similarities and differences in letters, words, and pictures. In the achievement test the child must identify printed words in response to oral and visual cues, complete sentences from groups of suggested printed words, and draw simple inferences from what is read. Lacking a knowledge of words and their meanings, a child would get few of the test items correct, even by chance.

The distribution for RA_1, shown by the broken line, extends from a low score of 2 up to the highest possible score of 59. The mean score of 21.2 represents a passing of about a third of the items on the test. By the end of the school year the mean had increased to 38.0 with about two-thirds of the test items being passed on the average. The publisher's manual for the Lee-Clark test (1958) indicates that a mean score of 21 is equivalent to a grade placement of 1.8, while a mean score of 38 represents a grade placement of 2.3. Our sample of 638 pupils appeared to achieve a little above the normative group.

The RA_1 distribution has a distinct modal point at 16, but in the RA_3 distribution any semblance of a central mode has largely disappeared. Instead the distribution has become more rectangular and dispersed with significant gain in perfect scores. The greater dispersion is reflected in a rise of sigma from 10.1 for RA_1 to 13.5 for RA_3. The test manual reports sigmas for eighteen small samples ranging from 8. 7 to 15. 3. The standard deviations of our 25 classes, individually and combined, as given in Table 1, indicate about the same degree of heterogeneity as the test authors' data.

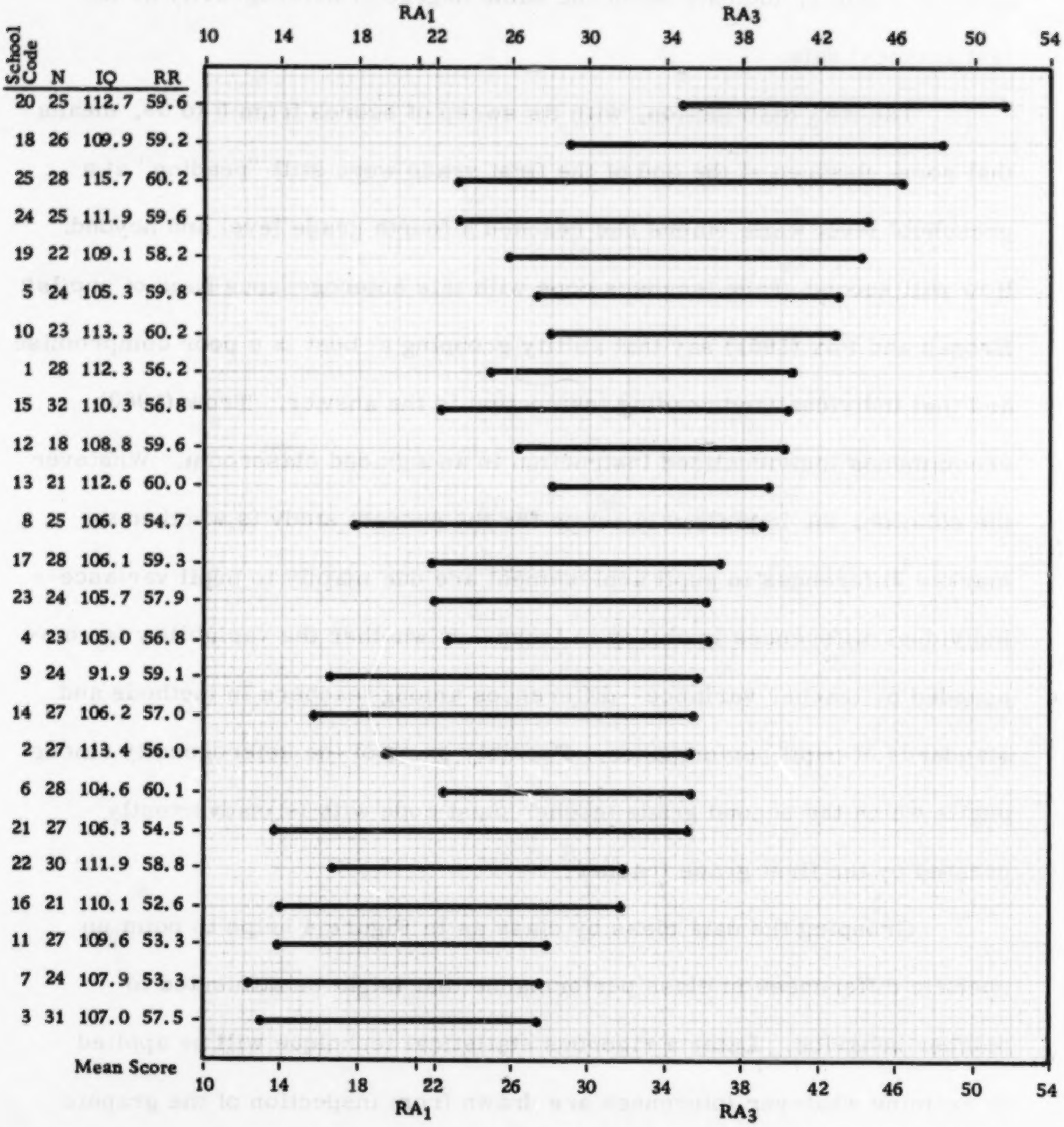
The RA_3 distribution, with its sweep of scores from 6 to 59, means that some children at the end of the first grade were still "reading" at a preschool level while others had reached a fourth grade level and beyond. How will second grade teachers cope with this heterogeneous band of pupils? Brogan and Fox (1961) say that ability grouping at best is a poor compromise and that individualized reading instruction is the answer. Trow (1960) recommends individualized instruction in an ungraded classroom. Whatever the solution, the important question for the present study is whether the marked differences in pupil achievement are due mainly to pupil variance--individual differences in ability to learn--or whether the variability is compounded by teacher variance--differences among teachers in methods and standards of pupil performance. Possibly some of the heterogeneity among pupils which the second grade teacher must cope with is inadvertently created by the first grade teacher.

Grouping the data class by class as in Figure 4 helps to point up specific differences in class performance that might be attributed to teacher behavior. Later a rigorous statistical technique will be applied to examine whatever inferences are drawn from inspection of the graphic data. The horizontal lines or bars in Figure 4 tell three things. The left end of each bar identifies the mean reading achievement of a given class

Figure 4

Initial and Terminal Reading Achievement (RA_1, RA_3)

Plotted by First Grade Classroom



Numbers of pupils in class, mean IQ, and Reading Readiness (RR) scores appear in the columns at the left. Lines in the body of the graph show mean gains on the Lee-Clark Reading Test, 1958 revision, Form A, administered in mid-year (RA_1), and the same Form A given four months later at the end of the school year (RA_3). Total possible score 59.

at midyear (RA_1). This point, in effect, indicates the amount each class gained during the first half of the school year, assuming a common origin for all classes. The right end of each bar gives the mean level of achievement at the completion of the first grade (RA_3). The classes are arranged in order of mean terminal achievement. The length of a bar shows class gain during the final half of the school year. Variations in the length of bars mean differences between classes in rate of gain.

Looking at the top bar, we see that the class in school 20 earned a mean achievement score of 34.8 at midyear and concluded the year with the highest mean score of all--about 52. (Mean scores on which the graph is based are given in Table 1.) Class 3 at the bottom of the diagram finished the year with an average score of 27, the lowest of any school. Visual inspection of the graph as a whole reveals that classes 3, 7, and 11 took a full year to achieve as much as classes 10, 13, 18, and 20 attained by midyear.

Some variation in terminal achievement between classes can arise from differences in IQ, reading readiness, and related factors. But the varying lengths of the bars suggest significant differences in rates of progress more or less independent of terminal achievement. Compare class 3 with class 21. The latter is inferior to the former in both IQ and reading readiness scores. At midyear both classes had almost identical scores, 13.0 and 13.7, both far below the group mean of 21.2. By the end of the year, however, school 21 scored almost at the group mean of 38 while school 3 was still far behind. A similar comparison can be made between class 3 and class 8. Again the latter has a lower mean IQ and reading readiness score than the former. At midyear, both classes were below the mean in reading achievement. But during the balance of the year class 8 gained steadily and at a relatively rapid rate to conclude the year with a score above the mean for the total sample.

School 13 shows a different trend. The class was superior in both IQ and reading readiness and achieved well to midyear, attaining a mean score well above average at the time. For the balance of the year, however, the rate declined until at the end the class barely exceeded the group mean. Reports of assistants indicated that periodic illness of the teacher during the spring may have contributed to the decline. But what about the classrooms in general? Can significant differences in teacher behavior or classroom climate be perceived and identified by an outside observer?

Ratings of Classroom Climate

Throughout the year a team of five research assistants visited each classroom weekly to check on the condition of the experimental materials, their availability to the pupils, and the amount of use. The assistants brought news to the teachers from other first grade classrooms and information about the project in general. Teachers came to look forward to the visits of the assistants, asking them about teaching procedures and methods used by other teachers. No attempt was made to restrict the flow of information between the teachers and the assistants except to conceal test results. The assistants were free to report that some rooms were being supplied with more or less materials than others, but they were not to talk in terms of "experimental" or "control" rooms. As far as any teacher was concerned, all 25 rooms were "experimental" in the sense that the assistants visited each one every week to convey information, arrange for forthcoming tests, check records, and render such direct assistance to the teacher as she might desire. Common chores for the assistants included duplicating lesson plans, mixing paints, arranging displays, checking books and materials, assisting at recess, and the like.

By the end of the year the five assistants had come to know the 25 teachers very well. They had served as their aides, they had observed all teachers at work with the children many times, and they had spent considerable time in informal discussions with each teacher individually. To take advantage of this intimate experience, the assistants at the conclusion of the project were asked to rate the learning climate in each of the 25 classrooms. Each assistant independently rated each classroom on a seven-point scale. (The Assistant Questionnaire is shown in Appendix B.) "Climate" was defined in terms of communication level between teacher and children, communication level between teacher and assistant, and four factors of classroom management (effectiveness, discipline, permissiveness, enrichment). Following this rating, the assistants arranged the classrooms in rank order from 1 to 25 according to whether or not they would like to have a child of their own in the room. A rank of "1" indicated the most preferred classroom and "25" the least preferred. These ratings and rankings were made independently by the assistants and without knowledge of achievement test results for the various rooms. The coefficient of concordance among the assistants was .70, indicating substantial inter-rater agreement.

The two classes described earlier as making notable gains in achievement in relation to pupil ability and readiness, class 8 and class 21, were given average ranks of 8 and 4 respectively by the assistants. Classes 3 and 13 with relatively small gains were ranked far down the list at 22 and 24, respectively. The correlations between all classroom ranks and mean achievement for all classes were .40, .50 and .51 for RA_1, RA2, and RA_3, meaning the higher the rank the greater the achievement. It would appear that some of the factors observed in the classrooms which influenced the judgments of the assistants were also factors that made for reading achievement. Let us assume for purposes of discussion that some of the factors were methods and standards used by the classroom teacher herself. What kinds of information might be supplied to the classroom teacher to help her modify her behavior?

Teacher Information and Pupil Ratings

At the present time information about teaching practices and standards comes to teachers mainly through professional magazines and curriculum reports and bulletins. That these are not wholly satisfying and adequate in themselves was revealed through the weekly reports of the assistants. The single item that recurred most frequently in the reports was an expressed interest by the teachers to know more about what other teachers were doing. The following quotation is typical.

> "...I've been a bit envious of the assistants' opportunity to visit many different classrooms. To a classroom teacher this same opportunity--even occassionally--would serve as a 'shot in the arm.' It would serve as a means of gleaning new ideas, refreshing one's outlook, and even making comparisons and analyses."

Some teachers expressed a feeling of isolation and of being cut off. Some were critical that their ideas had not been sought by others regarding methods, materials, and innovations in teaching.

> "My eleven year wish has been for more varied supplementary teaching aids in reading. I've always been curious as to ideas other first grade teachers have on this subject. Has anyone ever asked them? I've never been asked in eleven years. It seems to me the people directly involved in teaching reading to large groups of first graders might have some pretty good ideas on the subject..."

Teachers came to talk freely and openly with the assistants about their own problems as well as the work of the project. It is possible that the regular visitations of the assistants to all the classrooms created a "Hawthorne" effect, a stimulating effect, among both the experimental and control teachers. It is not unlikely that the greater impact was made on the control teachers since in their rooms the assistants were less involved with checking equipment, sorting units, and record keeping and consequently had more time to talk with the teacher and to help her with her own work.

Besides wanting information about other teachers, participating teachers reported to assistants a desire to know how their own classes were doing in comparison with others. Even though it was explained to both teachers and assistants at the start of the project that test data would not be revealed until the end, the teachers nevertheless continued to express an interest in the relative progress of their own classes.

Undoubtedly the release of the comparative test data during the year would have had an effect on the work of the teachers. The low mean scores of some classes probably would have meant to some teachers that they could do better. On the whole, however, achievement test data have only limited value for the first grade teacher. In the first place, the test scores do not tell the teacher precisely how she should change her methods, if she elects to, in order to do better. The low scores only say that some kind of change is in order. In the second place, much of the information in test scores is redundant. The teacher already knows the pupils who are doing well and those who are doing poorly. This fact was checked out in the present study by having the 25 teachers estimate the reading status of each child on a five point scale at the same time the assistants were administering the objective achievement tests. Inasmuch as test findings were withheld from the teachers until the conclusion of the project, the teacher ratings were free from knowledge of test results. Intercorrelations between teacher estimates and other variables are given in Table 2.

It can be seen from the table that correlations among the three sets of teacher estimates, each separated by two months, ranged from .78 to .87, while the intercorrelations among the three tests of reading achievement ranged from .71 to .85. Intercorrelations between estimates and tests ranged from .51 at midyear to .71 at the end. The steady rise of

TABLE 2

INTERCORRELATIONS AMONG IQ, READING READINESS (RR), READING ACHIEVEMENT (RA_1, RA_2, RA_3), AND TEACHER ESTIMATES OF READING PROGRESS (TE_1, TE_2, TE_3)

N = 638

	TE_1	TE_2	TE_3	RA_1	RA_2	RA_3	RR
TE_2	.80						
TE_3	.78	.87					
RA_1	.51	.53	.55				
RA_2	.58	.64	.64	.77			
RA_3	.65	.70	.71	.71	.85		
RR	.48	.45	.45	.41	.45	.47	
IQ	.31	.30	.30	.29	.31	.34	.26

coefficients from midyear to the end of the school year is a function of increased dispersion. The wider the good readers are separated from the poor readers, as at the end, the easier to judge and to measure.

Teachers tended to use performance of their present classes as a standard for what was "superior," "good," "average," "fair," and "poor." Since classes varied considerably in mean achievement, what was judged as an "average" reader in one class might be judged as "fair" or even "poor" in another. Hence, teacher estimates were not equivalent from class to class. Pooling of all the estimates, as was done in Table 2, tended to attenuate the correlations somewhat. The median coefficients for the 25 classrooms, computed class by class, are compared below with correlations for the total sample shown in parentheses.

$$r \; TE_1 \, RA_1 = .59 \; (.51)$$

$$r \; TE_2 \, RA_2 = .74 \; (.64)$$

$$r \; TE_3 \, RA_3 = .80 \; (.71)$$

Within the various classes the correlations between estimates and achievement scores tend to approach the reliability of the achievement test itself, suggesting that teachers can rank the pupils about as well as the test, especially as the year progresses. What the teachers do not have, however, is a comparison model with other classes.

Data given earlier showing disparity in rate of reading progress from classroom to classroom may mean that teachers do not have similar standards for judging achievement of their classes as a whole. Also cited earlier were comments by teachers which expressed feelings of being cut off from other first grade classes than their own. These facts point to a need for more communication among first grade teachers--some method of providing a model for comparison. The most direct way is observation provided on a released time basis for visiting other classrooms. This still would not provide a common standard, and might be a budget item difficult to justify to a lay school board. Another alternative is suggested here: television.

A useful communication model for all first grade teachers could be provided by television. If a part of reading instruction for first grade pupils were to be broadcast weekly to all schools, then every first grade teacher would be able to watch another teacher in action. Each classroom teacher could compare her expectations, standards, and methods with the TV teacher and at the same time observe how well her own class works along with the TV teacher. By rotating TV teachers, more than one model might be provided in a given year, meaning more varied experiences for both the classroom teacher and the children. In such a program which integrates TV with classroom teaching, the classroom teachers would channel ideas and suggestions to the TV teachers, thereby completing the circle of communication. It is important to appreciate that under this plan a TV teacher would not take over reading instruction from the classroom teacher. She would be televised only enough to set a pace and to provide ideas and resources for the classroom teacher. The TV lessons broadcast to the children during the day might be repeated in the late afternoon or evening with a critique for the benefit of classroom teachers and parents. This kind of feedback information would help to sharpen the perceptions of the classroom teacher, encourage self-appraisal, and provide a sound basis for improvement and innovation.

Informal reports from the Midwest Program for Airborne Television Instruction (Smith, 1961) suggest that some of the TV teachers at the elementary level regard themselves not as "master" teachers but as expendable examples or models, ready to return to the classroom as soon as their way of teaching has been seen and assessed by other classroom teachers taking part in the TV project. Seen in this light, television becomes a valuable instrument for in-service training, affording an easy means for teachers to compare their methods of teaching with others. It is also likely, as will be pointed out in a later section, that pupils in the primary grades would profit from experiences with more than one teacher per year.

Besides providing models, television would tend to establish uniformly high standards and might help to reduce the present range of attainment in pupils. For children at the end of the first grade to vary in reading achievement from a preschool level to the fourth grade and beyond is no credit to our methods of teaching. Suggestions were offered earlier that part of pupil variability may be produced by varying standards among teachers themselves. By improving standards through comparison models and open feedback, it is likely that pupil achievement would become more uniform from class to class and, in addition, pupils would gain a measure of freedom from limitations traditionally imposed by intelligence and so-called readiness factors. In short, better methods of teaching should produce greater freedom for all children to learn essential cognitive skills such as are involved in reading. Porter (1959) arrives at similar conclusions from his analysis of machine teaching of spelling, there being essentially no relationship between intelligence scores and achievement in experimental groups but a significant positive relationship in control groups taught traditionally. In other words, it takes more brains to learn with some forms of teaching than with others.

Who is a good choice for TV teaching among the teachers in the current project? Reference is made again to Figure 4. The teachers in classes 8 and 21 have something distinctive. Both took below average classes and brought them along at an increasingly rapid pace in reading until by the end of the year the classes were equal to the group mean in achievement. Whether these same teachers would work as well with above average classes

cannot be told, but what they attained with the groups they had is worth seeing by others. The teacher in class 20 also was outstanding, but in a different way. Right from the start she moved rapidly and consistently with a bright class and concluded the year with an outstanding group of readers. Interestingly, the standard deviation of the group steadily declined from 11.5 (RA_1) to 9.5 (RA_2) and on down to 8.2 (RA_3). A part of this decline must be attributed to successively lower test ceilings as the mean scores rise. Nevertheless, the uniformly high achievement of this class is noteworthy. This teacher, like teachers 8 and 21, has something worth televising as a model for others to observe.

Factors in Reading Achievement

Based on Regression Weights

As previously mentioned, all pupils were tested for reading readiness and intelligence, followed by three tests of reading achievement spread over the second half of the school year. Records also were accumulated on each child in the ten "experimental" classrooms showing the number of times the self-teaching reading units were used during the year.

Knowing that usage would be limited by accessibility, an "index of availability" was worked out for each room, based on the equipment being set up for use at all times, the units being in easy reach of the pupils, the equipment being located in a non-traffic area of the room, and space and chairs being available for the pupils to sit as they worked with the materials.

At the end of the project the 25 teachers filled out a questionnaire giving their reactions to the research project. All reported the research assistants pleasant and helpful, all were happy with the idea of retaining the research materials at the conclusion of the project, and nearly all said they would be willing to participate in a project like this one again next year. In this climate of opinion, each teacher completed two identical check lists (Semantic Differential, developed by Osgood, Suci, and Tannenbaum (1957)), one structured to reveal feelings toward pupils, the other to reveal feelings toward parents. A copy of the check list is provided in Appendix C. The assistants separately used the same check list to react to each of the 25 teachers as a part of their total evaluations at the conclusion of the project.

As a measuring instrument the Semantic Differential purports to show feelings along three dimensions: evaluation such as happy-sad, good-bad, friendly-unfriendly; activity such as excited-calm, slow-fast, resting-busy; and potency or power such as timid-bold, tender-tough, dominating-submitting, weak-powerful.

Information was available on the age and years of teaching experience of each teacher, age and kindergarten experience of each pupil, and the parents' education and occupation level.

Data generated by the various assessments of the teachers and the assistants, the background information on pupils, teachers, and parents, and indices of unit usage, intelligence, readiness and achievement were transferred to punch cards for computer analysis. A mathematical model described by Hoffman (1960) was used to obtain multiple correlation coefficients and percentage weights of predictor variables. (Intercorrelations among all variables are given in Appendix D.) The criterion variable was reading achievement. Predictor variables were 27 various measures listed in Table 3. Only 25 predictor variables were used with the control classes since unit usage and availability did not apply to them.

Multiple correlation coefficients were computed for various combinations of the reading achievement data obtained from the three applications of the reading achievement test. The coefficients with the various criterion scores for the experimental groups (N = 258), the control groups (N = 380), and the total sample (N = 638) are shown below.

Criterion	Experimental Group	Control Group	Total
(1) RA_1	.67	.69	.67
(2) RA_2	.65	.72	.68
(3) RA_3	.60	.69	.65
(4) Difference T score	.37	.38	.36
(5) Difference ratio score	.48	.57	.53
(6) Total RA_1, RA_2, RA_3	.68	.73	.71

Both difference T scores and difference ratio scores were expressions of relative gains which did not yield as high coefficients as the gross scores for any one of the reading tests. The single reading tests in turn were not quite as satisfactory as the three tests combined, judging from the size of the multiple correlation coefficients. Accordingly, in the discussion that follows, attention will be confined to the prediction of criterion 6, the total achievement test score.

TABLE 3

PERCENTAGE CONTRIBUTION OF VARIABLES TO READING ACHIEVEMENT BASED ON REGRESSION WEIGHTS

Variable			Experimental Classes (N=258)	Control Classes (N=380)
1	Unit usage		7%	-
2	Unit availability		4%	-
3	Child's age		0%	0%
4	Child's intelligence		11%	9%
5	Kindergarten experience		0%	0%
6	Reading readiness		25%	15%
7	Semantic differential[1]	) Happy-Sad	0%	1%
8	by teachers	) Active-Inactive	1%	1%
9	on children	) Weak-Powerful	1%	0%
10	Teacher's age		5%	5%
11	Teacher's experience		24%	2%
12	Teacher's rank, judged by assistants		0%	0%
13	Semantic differential[1]	) Happy-Sad	1%	0%
14	by assistants	) Active-Inactive	1%	4%
15	on teachers	) Weak-Powerful	0%	2%
16	Teacher effectiveness)		1%	16%
17	Teacher discipline	) Judged by	1%	0%
18	Teacher rapport	) assistants	0%	9%
19	Teacher permissiveness)		0%	0%
20	Teacher enrichment	)	0%	1%
21	Teacher communication with assistant		7%	10%
22	Total score (variables 16-21)		0%	0%
23	Parent education		6%	1%
24	Parent occupation level		5%	5%
25	Semantic differential[1]	) Happy-Sad	0%	4%
26	by teachers	) Active-Inactive	0%	4%
27	on parents	) Weak-Powerful	0%	11%
			100%	100%

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[1] For a full explanation of the semantic differential technique of measuring meaningful judgments see Osgood, C. D., Suci, G. J., and Tannenbaum, P. H., The Measurement of Meaning, University of Illinois Press, Urbana, 1957.

A multiple correlation coefficient of .71 for the total sample means that the predictor variables accounted for about half of the variance in the criterion. This level of prediction is more than enough to make comparisons between the experimental and control groups meaningful, and to assess the relative effectiveness of the self-teaching materials in relation to other variables as determiners of reading achievement.

Inspection of Table 3 shows that several predictors carried little or no weight in either the experimental or control classes. These are by number:

Variable Number	
3	Child's age.
5	Kindergarten experience.
7,8, 9	Ratings of classes by teachers on the semantic differential.
12	Teacher's rank, assigned by assistants.
13, 15	Ratings of teachers by assistants on the evaluation and potency dimensions. of the semantic differential.
17, 19, 20, 22	Teacher discipline, permissiveness, enrichment, and total score of ratings by assistants of teachers.

Even though some of these variables, such as number 12 - teacher's rank, correlated positively with reading achievement as reported earlier, when placed in the regression equation, the variables were found to have no unique value of their own.

In the experimental classes nine variables contributed 4 percent or more to reading achievement.

Variable Number	
1	Unit usage 7%
2	Unit availability 4%
4	IQ 11%
6	Reading readiness 25%
10	Teacher's age 5%
11	Teacher's experience 24%
21	Teacher communication with assistant 7%
23	Parent education 6%
24	Parent occupation level 5%

For the control groups, eleven variables produced weights of 4 percent or higher.

Variable Number	
4	IQ 9%
6	Reading readiness 15%
10	Teacher's age 5%
14	Activity dimension of semantic differential 4%
15	Teacher effectiveness 16%
16	Teacher rapport 9%
21	Teacher communication with assistant 10%
24	Parent occupation level 5%
25, 26, 27	Semantic differential by teachers on parents 19%

When the above variables and the weights are arranged and grouped, Table 4 emerges.

It is apparent that the weighting of the preschool variables is heavier for the experimental classes than for the control classes, which in turn means that classroom and teacher variables mount larger in the control classes. Before discussing these differences in detail, let us

TABLE 4

PERCENTAGE WEIGHTS GROUPED BY EXPERIMENTAL AND CONTROL CLASSES

Experimental Classes		Control Classes	
Preschool variables	47%	Preschool variables	30%
IQ	11%	IQ	9%
Reading readiness	25%	Reading readiness	15%
Parent education and occupation	11%	Parent education and occupation	6%
Classroom and teacher variables	47%	Classroom and teacher variables	65%
Unit usage and availability	11%		
Teacher age and experience	29%	Teacher age and experience	7%
Communication with assistants	7%	Communication with assistants	10%
		Effectiveness and rapport in classroom	25%
		Active-inactive score (on teacher)	4%
		Teacher perception of parents	19%
Miscellaneous negligible variables	6%	Miscellaneous negligible variables	5%
TOTAL	100%	TOTAL	100%

review again the role of the teacher in the experimental and control classes.

The intent of the project was to assess contributions of self-teaching materials when introduced as supplementary aids to regular classroom teaching. The unit materials and their use by the children were not to interfere with or disturb the normal routine of the teacher. She was to continue with her teaching as she always had. Such was the intent. In practice, however, the unit materials added to the teacher's problems of housekeeping, record keeping, and classroom management. Record players, records, books, and projectors are valuable items to a teacher. When record players were broken by the children, and when books, reels, and records were lost, damaged, or mixed up, experimental teachers undoubtedly felt some responsibility, particularly when assistants visited weekly to inspect the equipment, replace damaged and broken items, and put mixed up units in order. Even though reassured that a certain amount of loss, breakage, and confusion was to be expected, the teachers in the experimental classrooms undoubtedly felt an obligation to watch over the equipment and to regulate its use. They likewise were concerned with record keeping by the children, and with impressions the assistants might form of their teaching, based on their management of the materials.

Conditions in the control classrooms were less demanding. Five classes had no materials of any kind, and the ten that did were given only inexpensive viewers and reels of general interest. No systematic records of use were expected of the control classrooms, although the assistants checked on usage by direct observation, noting the flow of materials home, and determining with the teacher whether enough materials were on hand to satisfy pupil interest and demand.

Loss of reels or possible breakage of viewers were of small moment in the control classrooms since the materials were sturdy, inexpensive, and easy to replace. The control teachers also knew the reels were of general interest and were to be used by the children in their spare time as enrichment aids. It is not unreasonable to assume that the materials in the control classrooms, by their nature disturbed the normal equilibrium of the classroom less than in the experimental classes. Likewise, it seems fair to assume that the assistants might have perceived the control teachers more in relation to their classes, while they judged the experimental teachers more by the quality of classroom organization which fostered the maximum use of the self-teaching units which they knew to be key elements in the research.

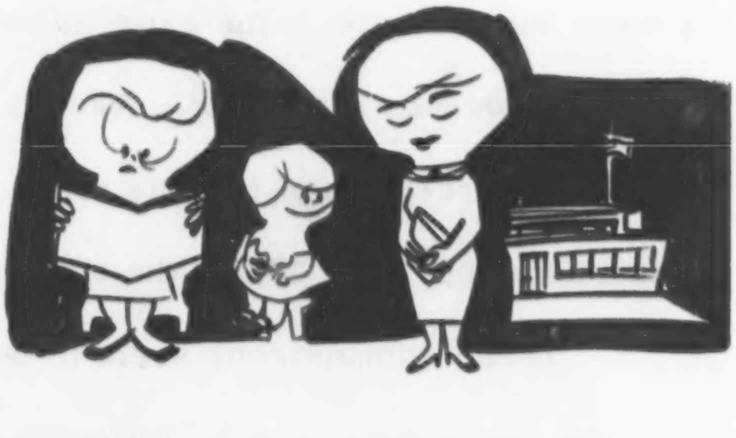
Returning now to Table 4, it can be seen that intelligence, reading readiness, and parent occupation and education contributed 47% of the weight to reading achievement in the experimental classes but only 30% in the control classes. Similarly, under "classroom and teacher variables," teacher age and experience contributed 29% in the experimental classes and only 7% in the control classes. Teaching experience possibly takes on greater significance in the experimental classes because of management problems already alluded to. Assistants' perception of room climate, and teachers' perception of parents carry no weights in the experimental classrooms but total 48% in the control classrooms.

These comparisons seem to define different kinds of effective teaching which may "reach" different children. As will be shown later, there was no significant difference in reading achievement at the end of the school year between children in experimental classrooms and children in control classrooms, but within experimental classrooms the children who used the units most tended to score higher than did children who used them least.

We may have some teachers who are especially effective with some of their children in part because of the classroom managerial skills which come with experience and maturity. There may be others whose effectiveness is derived more from social and perceptual skills less dependent on classroom experience. It also is possible that some children achieve more with one kind of teacher and some with another. There may be additional strong teacher characteristics which stimulate still other children to greater growth in the classroom.

The significance for public schools of these concepts as shown by this study may be as follows:

When children come to the first grade well prepared for school, i.e., have high intelligence and reading readiness and come from high socio-economic homes, and when a variety of instructional materials are available, a classroom teacher with good managerial skills may be needed. Her role may be that of facilitating rather than leading learning activities.



When children come to the first grade with little preparation for school, i.e., have mediocre intelligence and reading readiness, and come from depressed homes, or when instructional materials are sparse, greater dependency must be placed on the personal social skills of the teacher. She may need to initiate and lead learning activities.

Stated in this way, both kinds of teachers are valuable assets to a school and should not be judged on a single standard of teaching method or classroom procedure. Further research for the patterns of effective teacher characteristics are called for as suggested also in the papers by Ackerman (1954), Howsam (1960), and Mitzel (1960).

Relative Gains in Experimental and Control Classes

The central hypothesis guiding the current study stated that pupils using self-teaching materials would show greater gains than those not using such materials. The regression weight of 7 percent for unit usage shown in Table 3 suggests a modest contribution of the self-teaching materials to overall reading achievement in the experimental groups. Also, the fact that the multiple correlation coefficient for the experimental classes (R = .68) is lower than for the control classes (R = .73) suggests that the self-teaching materials in the experimental classes did not contribute anything additional to the total learning situation that the teacher in the control classes could not provide or compensate for in other ways. It might be said that if children were not preoccupied with the self-teaching materials, then the teacher would have provided some substitute activity or worked with them herself in ways having predictive significance.

It should be realized, however, that first grade teachers have a very complex job to do: managing upwards of thirty children with their individual differences and attempting to teach them tool skills as well. What would a parent do with thirty children in a home? Problems of traffic management alone would overwhelm the average parent who finds it taxing to manage for a family of three or four, much less to carry on formal instruction.

The ten teachers in the experimental classes as contrasted with the ten control teachers with placebo materials checked items about the effect of research materials as follows at the conclusion of the project.

	Number Checking	
	Experimental	Control
____materials provided an independent activity for children.	10	10
____gave children opportunities to take responsibility.	10	10
____broadened children's interests.	10	8
____helped meet individual differences.	7	5
____helped teach good social relationships.	7	4
____class more enthusiastic than usual.	7	3
____contributed to development of reading skills.	5	1
____more progress in reading this year than usual.	4	1
____caused disappointment when equipment broke down.	4	0
____provoked complaints from parents.	1	0
____aroused interest of other teachers.	7	4

The experimental teachers perceived more value in the unit materials than the control teachers saw in the placebo materials. Half of the experimental teachers believed the units contributed to the development of reading skills and four saw more progress in reading this year than usual as opposed to one in the control classes.

Numerical gains in achievement for all groups are presented in Table 4. At midyear (RA_1) all groups had virtually identical means except for C_2, the control group with placebo materials confined to the classroom. This group differed significantly ($P < .01$) from the others, with the main source of the variance coming from class 20 that achieved higher than all others during the year. At the end of the year C_2 continued to be significantly superior to the others.

TABLE 4

MEANS AND STANDARD DEVIATIONS FOR READING ACHIEVEMENT (RA_1, RA_2, RA_3) BY CONTROL AND EXPERIMENTAL GROUPS

	RA_1		RA_2		RA_3		Diff.	
Group	Mean	Sigma	Mean	Sigma	Mean	Sigma	RA_3-RA_1	N
C_1 (strict control)	19.5	7.4	31.6	11.7	38.8	10.8	19.3	133
C_2 (classroom)	25.4	9.4	35.7	11.7	42.8	11.7	17.4	124
C_3 (take home)	20.7	8.9	29.4	12.2	36.5	11.7	15.8	125
E_4 (classroom)	19.6	9.1	29.8	12.1	36.0	13.3	16.4	122
E_5 (take home)	20.9	7.7	30.0	11.7	36.1	12.4	15.2	134

Comparing the mean scores and the gains for experimental groups, E_4 and E_5, with the controls, C_1, C_2, and C_3, it is apparent that the experimental groups did no better than the control groups. Likewise, the groups that took materials home, C_3 and E_5, did no better than their counterparts, C_2 and E_4, with use confined to the classroom. Control group C_1 with no special materials did as well as any of the groups, except C_2, and exhibited stronger gains between RA_1 and RA_3.

The analysis of mean gains demonstrates that the use of the self-teaching materials as auxiliary aids in the classroom and at home did not add to overall achievement in reading. Whatever contribution the self-teaching materials made--and they had some effect as shown by the multiple regression analysis--was as a subsitute for other activities that would have occupied the teacher and the pupils.

Being heavily occupied, if not overworked, first grade teachers are alert to things that pupils can do on their own, singly or in small groups, while they give special attention to other groups. The unit materials served this purpose well. With one exception the experimental teachers said they looked forward to unrestricted use of the materials the next year. The single exception expressed concern and worry over the problem of breakage.

As intimated earlier, the unit materials and equipment caused problems in some classrooms. With space at a premium some teachers could not leave the equipment set up at all times. Others felt a need to supervise personally the use of the units and the equipment which tended to restrict usage in comparison with rooms where the teacher delegated responsibility for the equipment and record keeping to the pupils themselves.

Differences between classrooms in amount of per pupil use of the materials are shown in Table 5.

TABLE 5

UNIT USAGE BY EXPERIMENTAL CLASSES

		Mean Usage Per Pupil			
School Code	Availability Index	In Class	At Home	Total	RA_3
1	1	12	7	19	40.6
2	4	17	9	26	35.4
3	2	23	5	28	27.4
4	9	29	40	69	36.2
5	6	34	17	51	43.0
6	7	32	--	--	35.4
7	3	16	--	--	27.5
8	8	19	--	--	39.1
9	5	38	--	--	35.7
10	10	55	--	--	42.8

Striking differences appear between classes in use level of the materials. In school 1, for example, the unit use per pupil in the classroom was 12, with only seven "take homes", over a six months period. In school 4, by contrast, the average classroom use was 29 per pupil with 40 "take homes" for a total of 69. In schools where unit usage was confined to the classroom similar differences occurred. In school 7 the average use was 16, while in school 10 it reached 55. These use levels are in part a function of availability of the materials. Where the equipment was out and accessible at all times, as indicated by an availability index of 10, usage tended to be high. As availability declined, usage also tended to decline. The assistants visiting the rooms attempted to encourage conditions as satisfactory to use as possible.

Variations in unit usage between classes mean that usage scores are not strictly comparable for children with different teachers. A teacher who encourages unrestricted use of the materials throughout the school day will have both good and poor readers with relatively high usage scores. Another class in which the teacher restricts or discourages usage for any reason, good readers as well as poor readers will have relatively low usage scores. This lack of comparability cannot be corrected by using standard scores since the important index still is frequency of use.

Lack of comparability tends to reduce correlation coefficients where unit usage is one of the variables. Something of the nature of the problem is shown by correlations of .13, .19, and .15 between unit usage and RA_1, RA_2, and RA_3, respectively for the 638 pupils. Correlations between average unit usage and mean achievement for the ten experimental rooms are .49, .45, and .43. Thus usage becomes an index of the learning climate of the classroom. Teachers who permit or encourage greater unit usage tend to have classes that as a group achieve more in reading.

Parents' Views Toward Education

Parents whose first grade children participated in the classroom phase of the research during the entire year, 573 mothers and 474 fathers, were interviewed in both fall 1960 and spring 1961 to assess their attitudes toward public education and, in particular, the schools their first graders were attending.

The parents were visited early in November and again in late May by Portland State College students recruited and trained by project staff members. Interviewers took The Home and School Questionnaire (Appendix A), designed by the staff, to each home and waited while parents individually filled them out. The questionnaire contained 29 statements of opinion regarding education on which to show agreement, indecision, or disagreement, and some 15 items of background information and opinions related to the experimental materials.

The test-retest tabulations on The Home and School Questionnaire indicate high stability of responses on the total population of respondents and on cross sorts by educational level, experimental group, and sex. Few changes approaching statistical significance were found. Any measurable shifts which do occur therefore may be worth noting.

Hypothesis 3 of the present study states that parents whose children bring self-teaching materials home will perceive their children as making more rapid progress in school and will show a more favorable, active interest in the work of the school and the teacher than will parents of children who do not take such materials home. To test this hypothesis, parent questionnaire responses were tabulated by experimental and control groups.

Group 5 N = 215 (unit materials used in classroom and at home)
Group 4 N = 194 (unit materials used in classroom only)
Group 3 N = 209 (placebo materials used in classroom and at home)
Group 2 N = 212 (placebo materials in classroom only)
Group 1 N = 217 (no materials provided)

Shifts in percentage of responses from fall to spring were examined to determine if parents of children who took home experimental materials showed more favorable attitudes toward the schools at the end of the school year than earlier in the year, and if changes differed from those shown by parents of children who did not take materials home or who had no experimental materials at all. These computations show some changes in items 12 and 14, as follows:

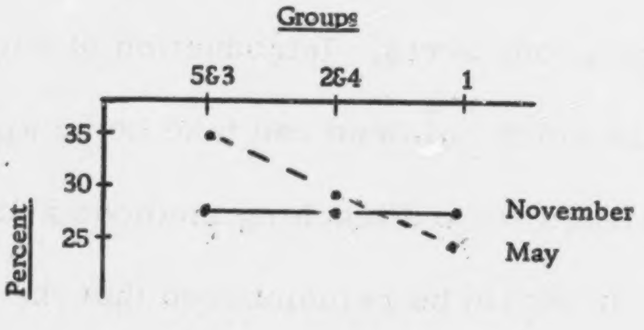
Item 12. Schools should invest more money in films, record players, still pictures and related teaching aids.

	Percentage								
	Agree			Undecided			Disagree		
Group	Nov.	May	Diff.	Nov.	May	Diff.	Nov.	May	Diff.
5	27	36	+9	40	37	-3	33	27	-6
4	30	33	+3	38	35	-3	32	32	0
3	29	32	+3	42	42	0	29	26	-3
2	27	27	0	34	44	+10	39	29	-10
1	28	25	-3	40	48	+8	31	26	-5

Item 14. The teaching methods used today are better than when I went to school.

Group	Agree Nov.	Agree May	Agree Diff.	Undecided Nov.	Undecided May	Undecided Diff.	Disagree Nov.	Disagree May	Disagree Diff.
5	61	67	+6	23	18	-5	16	15	-1
4	54	56	+2	22	26	+4	24	18	-6
3	50	54	+4	26	26	0	24	19	-5
2	59	60	+1	22	22	0	19	18	-1
1	59	58	-1	25	22	-3	16	19	+3

On item 12, the strongest gain in support of audio-visual aids was shown by group 5 parents, followed by group 4 and group 3 parents, with growing indecision by group 1 and group 2 parents. All parent groups tended to move from disagreement to indecision, or from indecision to agreement in the course of the year. The following graph shows the percentage of agreement responses on item 12 for groups 5 and 3 combined, groups 2 and 4 combined, and for group 1.



Combined in this way, all three groups showed 28 percent agreement with item 12 in November, with some changes by the following May. For the "take home" groups, agreement had risen to 35 percent; for the "classroom use" groups, there was a 2 percent rise; for the group with no experimental materials, a 3 percent drop was recorded. Parents whose children took experimental materials home thus tended to approve more audio-visual aids than did the parents of children who had the materials in the classroom only or not at all. This order gives some support to hypothesis 3.

On item 14, a higher gain in agreement by parents in groups 5 and 3 than in other groups is shown. Groups 2 and 4 were next in order, and group 1 showed 1 percent less agreement and 3 percent more disagreement at the end of the school year than earlier. Parents whose children took experimental materials home from school tended to gain more in their belief that schools of today are better than when they went to school than did parents of children who had the materials in the classroom only or not at all. Hypothesis 3 again is given slight support.

Although all changes in opinion were small, they cannot be disregarded in view of the general test-retest stability of the questionnaire for the total group and sub-group sorts. Introduction of supplemental instructional materials which children can take home appears to have some effect on parents' attitudes toward teaching methods and support of audio-visual teaching aids. It should be remembered that these materials were in the classrooms part of one year, and that children varied widely in their use. A longer range program for introducing new materials into homes to gain parents' support of the instructional program is worth considering. Such a program might show small gains the first year, as in this study, and cumulative gains in later years.

To assist in further assessment of hypothesis 3, three items were added to the end-of-the-year questionnaire, with the following results:

Item 36. How much have you talked with your first grade child's teacher this year?

	Percentage		
Group	Most or All	Few Remarks	Little or None
5	80	7	13
4	67	10	23
3	72	8	20
2	77	7	16
1	65	2	27

Item 37. How many PTA meetings have you attended this year?

	Percentage			
Group	Most or All	Some	Few	None
5	18	22	22	37
4	16	21	22	41
3	12	18	22	47
2	13	25	23	39
1	15	20	25	40

Item 38. What do you think of your school's program for teaching the three "R's."

	Percentage				
Group	Excel-lent	Good	Fair	Poor	Very Poor
5	34	51	11	1	1
4	29	55	13	2	0
3	23	55	15	4	2
2	30	55	11	1	2
1	22	60	15	1	1

Item 36 shows more conferences and discussions with teachers reported by parents in group 5 than in other groups. This may be a result of greater need for communication when children bring home mechanical equipment rather than a reflection of parent attitude or interest in the schools. However, many educators believe that anything which establishes firmer communications between the school and home is an asset.

Item 37 indicates most faithful PTA attendance by parents in group 5 with groups 4, 1, 2, and 3 following in lesser proportions. Group 5 also shows the lowest report of no attendance. With group 5 having the highest proportion of reported PTA attendance and group 3 having the lowest, the mere bringing of materials home appears to have no relevance for PTA attendance.

Item 38 drew the highest reports of excellence in teaching the three "R's" from groups 5 and 2, with the lowest in group 1. When responses of "excellent" and "good" are combined, however, there is little difference among groups. Responses of "fair" are lowest for groups 5 and 2, and very few parents in any group reported their schools were doing a poor or very poor job.

Responses on items 12, 14, 36, and 38 give some small support to the hypothesis that parents of children who take self-help materials home will show more interest in the work of the school and the teacher. As in the classroom, the introduction of these materials in the home probably is a miniscule addition to an already complex environment.

Several items to assess parents' satisfaction with the progress of their children in school were included in the questionnaire to test hypothesis 3, that parents whose children take home self-help materials will perceive their children as making faster progress than will the parents of children who do not take such materials home. Approval responses to these items in the fall and again in the spring were of such magnitude that little discrimination among groups emerged. The greatest change occurred on item 10, "My first grader is not learning enough from his school work." Disagreement in group 1 rose from 83 percent to 88 percent, and agreement in group 3 rose from 11 percent to 16 percent. Disagreement responses by all other groups ranged around 80 percent. The spring questionnaire included the following item to test hypothesis 3:

Item 35. During this year your first grader's progress in reading has been:

	Percentage					
Group	Beyond Anything Hoped	Better than Expected	About as Expected	Less than Expected	Very Disap-pointing	No Response
5	15	42	30	11	2	0
4	12	50	24	11	3	0
3	9	41	33	13	3	1
2	13	47	29	7	3	1
1	7	52	30	7	3	1

Group 5 drew the strongest response of "beyond anything hoped," but when figures for this response and "better than expected" are summed, group 4 is highest and group 3 is lowest. Little can be concluded from this, except to speculate that the non-academic materials brought home by group 3 children may have encouraged doubts in some parents regarding reading achievement. Certainly there is nothing in the mean achievement scores for groups 3 and 5, as reported in Table 4, to account for the difference. The pupil performance of the two groups is virtually identical.

A question was asked of parents whose children brought materials home from school, "How did your child use the materials?". Some parents indicated that the viewers, records, and books were used mainly for amusement, many reported "to help in school work." Other uses mentioned were to share with other children in the family, to foster dramatic play and music appreciation, and to gain general information. It is evident that some parents, like teachers, saw value in the materials aside from their contribution to reading.

With parent attitudes showing little contrast among experimental groups, and little change from fall to spring, a search was made to discover if other parent characteristics were more related to attitude differences. Responses tabulated by parent education level and sex of parents showed some of the looked for differences.

National, state, and local community polls, as summarized by the National Education Association (1958) have shown strong majority approval of the public schools in the United States, as has this study. A number of surveys (i.e., Auster and Melstad, 1957; Capra, 1957; Hines and Grobman, 1958) indicate that educational level is an important factor influencing attitudes toward education. While most studies find that people in higher educational and occupational groups are generally mostly in agreement with current school practices, one summary (Robinson, 1959) cites a national poll by Roper (1950) in which groups with less education expressed greater satisfaction with the public schools than did high school and college graduates.

When responses of first graders' parents in the present investigation were sorted by educational level, proportions of favorable opinions toward education were found to be related significantly to years of formal schooling completed, and stable from fall to spring. Because of the stability, only tabulations from the questionnaires completed in May are given in this section.

The distribution by education for the population in this study reveals a higher educational level than shown by census figures for the state as a whole.

Educational Level			First Graders' Parents		Oregon Urban Population
			N	%	%
Grade school			62	6	29
High school			457	44	49
Technical school	132	12%	528	50	22
College	300	29%			
Graduate school	96	9%			

Willingness to support schools financially at present levels is greater among more educated parents, but it should be remembered that these parents also are better off economically (a rank order correlation of means of education and occupational level for the 25 classrooms is .81). Percentages on this item are:

Item 3. In my opinion, school taxes are higher than they need to be.

Parents' Educational Level	Percentage Agree	 Undecided	 Disagree
Grade school	34	37	29
High school	22	33	45
Technical school	29	29	43
College	28	21	51
Graduate or professional school	10	21	69

Several items on the parent questionnaire indicate that strongest approval of the public schools generally comes from the most educated parents. These are:

Item 14. The teaching methods used today are better than when I went to school.

Parents' Educational Level	Percentage Agree	 Undecided	 Disagree
Grade school	47	26	27
High school	59	23	18
Technical school	58	23	19
College	61	22	17
Graduate of professional school	66	22	12

Item 19. Modern schools have too many frills and not enough study.

Parents' Educational Level	Percentage Agree	 Undecided	 Disagree
Grade school	40	24	36
High school	26	22	52
Technical school	26	25	49
College	29	19	52
Graduate or professional school	23	26	51

Item 7. There should be more Bible study in the public schools.

Parents' Educational Level	Percentage Agree	 Undecided	 Disagree
Grade school	37	13	50
High school	30	20	50
Technical school	26	20	54
College	16	17	67
Graduate or professional school	23	13	64

It is interesting to speculate on the reason for the slight rise in agreement on the Bible study item among graduate and professional school parents over college educated parents. This may reflect a more philosophical frame of mind or more tendency to regard the Bible as literature and therefore legitimate public school subject matter. The general tendency is for a larger proportion of less educated parents to approve of more Bible study in the public schools and to have a sterner outlook on public school practices in general.

On items of opinion in the end-of-year survey, parents were asked to evaluate their first graders' progress in reading. Despite publicized assertions that "Johnny can't read," Portland area parents in this study gave overwhelming endorsement to present day reading instruction, with nearly 90 percent reporting that their child's progress equalled or surpassed their expectations. Furthermore, 83 percent indicated that the schools are doing a good or excellent job of teaching the three "R's." Because of the magnitude of these figures, responses were not tabulated by educational subgroup.

Questionnaire items related to communications show definite trends by educational level. Well educated parents feel more strongly than less educated parents that teachers give enough attention to their suggestions about handling children. This may be a reflection of parental perception, or it may be a report on the real state of affairs. However, well educated parents are less satisfied than less educated parents with how the schools keep the community informed about what goes on. The percentage figures are:

Item 2. I feel that teachers don't give enough attention to suggestions from parents about handling children in the classroom.

Parents' Educational Level	Percentage		
	Agree	Undecided	Disagree
Grade school	16	31	53
High school	9	25	66
Technical school	8	27	65
College	6	19	75
Graduate or professional school	1	26	73

Item 9. Schools are doing very well at keeping the community informed about what goes on.

Parents' Educational Level	Percentage		
	Agree	Undecided	Disagree
Grade school	82	12	6
High school	74	14	12
Technical school	71	19	10
College	64	19	17
Graduate or professional school	57	21	22

Note that while some 80 percent of the grade school and high school parents feel the schools are doing a good job of communication with the public, about 60 percent of the college and graduate level people agree with this statement.

It is interesting to observe that the less educated parents are more critical of the public schools, but they feel more satisfied with the amount of information they are getting from the schools. Well educated parents, on the other hand, express greater confidence in the schools but still want more information.

Sex Differences and Parent Attitudes

There is no doubt that fathers tend more than mothers to support a "no-nonsense" approach to public education, according to the findings in this study. The sample included 573 mothers and 474 fathers. The discrepancy is explained by 80 one-parent families and inability to arrange interviews with some fathers.

Teachers will be happy to know that generally, parents had high confidence in them early in the year, mothers more than fathers, and the confidence had increased by the end of the year. Children may wonder about increased endorsement of sterner discipline at school during the year, especially by fathers.

To show the general stability of opinion throughout the year, and general agreement by both parents, the following example is given:

Item 14. The teaching methods used today are better than when I went to school.

	Percentage					
	November			May		
	Agree	Undecided	Disagree	Agree	Undecided	Disagree
Fathers	57	26	17	60	23	17
Mothers	57	21	22	58	24	18

There was some difference shown in responses by mothers and fathers, but with growing confidence by both parents as shown in the following item:

Item 18. My first grade child is well understood by his (her) teacher.

	Percentage					
	November			May		
	Agree	Undecided	Disagree	Agree	Undecided	Disagree
Fathers	68	28	4	76	19	4
Mothers	80	15	4	85	10	5

More fathers than mothers believe that school taxes are higher than necessary and more mothers are undecided:

Item 3. In my opinion, school taxes are higher than they need to be.

	Percentage					
	November			May		
	Agree	Undecided	Disagree	Agree	Undecided	Disagree
Fathers	26	22	52	30	24	46
Mothers	17	34	49	21	30	49

General satisfaction with the school's program and the progress of the children is shown by two items. Note that mothers exceeded fathers in the highest approval category, but when the two top categories are combined, parents of both sexes agree more closely in their level of satisfaction.

Item 35. During this year your first grader's progress in reading has been:

	Percentage				
	Beyond Anything Hoped	Beyond Expected	About as Expected	Less than Expected	Very Disappointing
Fathers	8	51	28	9	3
Mothers	13	43	31	10	3

(No response, Fathers, 1%)

Item 38. What do you think of your school's progress for teaching the three "R's."

	Percentage				
	Excellent	Good	Fair	Poor	Very Poor
Fathers	19	61	14	2	2
Mothers	35	51	12	1	1

(No response, Fathers, 2%)

Fathers' agreement to fewer "frills," stronger discipline, and more homework for first graders is shown by the following items:

Item 19. Modern schools have too many frills and not enough study.

	Percentage					
	November			May		
	Agree	Undecided	Disagree	Agree	Undecided	Disagree
Fathers	32	21	46	33	23	44
Mothers	27	20	53	23	20	57

Item 21. I think discipline in today's schools is too lax.

	Percentage					
	November			May		
	Agree	Undecided	Disagree	Agree	Undecided	Disagree
Fathers	42	24	32	46	23	30
Mothers	31	23	46	32	23	45

Item 23. I feel the teacher should be permitted to spank unruly first graders.

	Percentage					
	November			May		
	Agree	Undecided	Disagree	Agree	Undecided	Disagree
Fathers	56	12	32	60	11	29
Mothers	38	11	50	42	15	43

Item 26. First grade children would get more out of school if teachers would assign homework regularly.

	Percentage					
	November			May		
	Agree	Undecided	Disagree	Agree	Undecided	Disagree
Fathers	24	25	51	25	24	51
Mothers	18	17	65	19	18	63

On questionnaire items related to communications, most parents feel listened to and well informed by the schools.

Mothers feel more strongly than fathers that teachers give enough attention to their suggestions about handling children. (Note the stability of this opinion from fall to spring for both groups of parents.) Fewer fathers than mothers feel that the schools keep the community well informed.

Item 2. I feel that teachers don't give enough attention to suggestions from parents about handling children in the classroom.

	Percentage					
	November			May		
	Agree	Undecided	Disagree	Agree	Undecided	Disagree
Fathers	8	28	64	8	28	64
Mothers	6	22	72	7	21	72

Item 9. Schools are doing very well at keeping the community informed about what goes on.

	Percentage					
	November			May		
	Agree	Undecided	Disagree	Agree	Undecided	Disagree
Fathers	64	19	17	66	20	14
Mothers	74	15	10	72	15	13

Evidence in the following items indicates that mothers have more firsthand acquaintance than fathers with teachers and educational programs through more direct contact with the schools.

Item 36. How much have you talked with your first grade child's teacher this year?

	Percentage				
	Conferences	Informal Discussion	Few Friendly Remarks	Said "Hello"	Not at All
Fathers	26	17	16	10	31
Mothers	86	10	1	1	2

Item. 37. How many PTA meetings have you attended this year?

	Percentage				
	All	Most	Some	Very Few	None
Fathers	1	5	16	23	55
Mothers	5	17	26	23	30

Mothers--endorsing school practices on all items--showed more confidence in the teacher, greater approval of the curriculum, less criticism of school discipline as being "too lax," and less preference for heavier homework assignments.

The tendency of mothers to approve more highly of school practices, as they are, may be consistent with the findings on parents' opinions by level of education. Those with more education, and who want more information, tend to give more approval. Those with less education, and who seek information less, give less praise and are more critical.

There is some evidence that the opinions of fathers are similar to responses of parents with less education who may be less informed about schools than are parents with more education. The less educated groups and fathers show less approval of what the schools are doing than do more educated groups and mothers. Since less educated parents tend to feel that the communication from schools is adequate, and since fathers participate in conferences and meetings less than mothers, some means other than more reading materials, more conferences, and more meetings should be sought to give information to these two groups of school taxpayers. Two suggestions may be considered: through materials and equipment for self-help learning which the children take home from school, and through evening television programs of demonstration teaching which the fathers and the less educated parents can see in their own homes. Educational television classes in French distributed by National Educational Television for parents and teachers of children who see in-school broadcasts is one example of what might be done. Another is a program of instruction in Spanish broadcast by KOAP-TV, Portland, Oregon. In-school broadcasts were received by children; also given were after-school broadcasts for teachers in receiving classrooms, which interested parents could see. Evening broadcasts of instruction in Spanish were given by the same teacher for adults. This kind of integration of instruction among children, teachers, and parents in the most convenient place for each may be worth developing in the interest of general rapport among all concerned with public education.

A good program of public information including television broadcasting and more traffic of parents and instructional materials between schools and home may result in greater satisfaction of parents with their public schools. It seems particularly important to raise the status of schools in the eyes of parents in depressed areas where children often show less motivation for school success than do children from higher socio-economic areas. When, as shown in another part of this report, a teacher can control only half the variables which contribute to a child's reading achievement in the first grade, she needs all the help she can get from good attitudes toward the schools which are formed in the home.

IV. COMMENT AND CONCLUSION

A prime condition of this study was that teaching materials introduced into classrooms by the research assistants were auxiliary or enrichment materials, and to be used by the children themselves. The materials were not to interfere with the face-to-face instruction which the teacher normally carried on with her class.

The initial hypothesis of the study stated that children using self-teaching materials would show greater gains in reading than children not using such materials. Comparison of mean gains by the experimental and control groups did not confirm this hypothesis. Children in the experimental classes gained no more than did children in the control classes. This finding is in line with numerous studies on other types of audio-visual aids, including television. Allen (1960) and Smith (1961) summarize more than 100 research studies on television teaching, the majority of which show no superiority either for television or for conventional teaching. As discussed earlier, the important factor seems to be not the mode of presentation but the relation of the method to the total complex of teaching. Even in this study where the materials were peripheral to the on-going teaching, the teacher nevertheless exercised a measure of control over the materials. She determined the day-to-day accessibility of the materials and how freely they were used by the children. In experimental classrooms where heavy use of the materials was permitted, gains tended to be greater than in classrooms with relatively light use. Under these conditions, however, the gains cannot be attributed exclusively to the materials themselves, It may well be that free use of the materials was indicative of a freer classroom climate for learning in general.

Analysis of factors contributing to reading achievement in experimental and control classrooms, using the technique of multiple correlation and regression weights, revealed that background variables like IQ, reading readiness, and family status counted more heavily in the experimental classes than in the control classes. Likewise, teacher age and experience were far more important in experimental classes, suggesting that introduction of the experimental materials may have created management problems that put a premium on experience. In the control classes factors relating to interaction and rapport with pupils and regard for parents were prominent. Comparability in levels of pupil achievement despite different weightings of factors in experimental and control classes lends support to the conclusions of Mitzell (1960) and Washburne and Heil (1960) that teacher effectiveness is multidimensional and that different kinds of teachers get varying achievement from different kinds of pupils.

Analysis of regression weights showed further that unit usage in experimental classes accounted for about 7 percent of the measured variance in reading achievement, meaning that the self-teaching materials made a contribution to be sure, but not over and above what was attained in the control classes in other ways.

The second hypothesis of this study stated that children using the self-teaching devices at home and at school would show greater gains in reading than children using the devices only in the classroom or not at all. Again a comparison of mean gains offered no confirmation of the hypothesis. In fact, figures on usage tended to show that taking materials home reduced classroom usage, offsetting in part whatever gains might have been expected from added practice with the materials at home. Praise from parents for "homework" did not show through in achievement gains for the "take-home" groups.

A third hypothesis stated that parents whose children bring self-teaching materials home will perceive their children as making faster progress in school and will show a more favorable interest in the work of the school and the teacher. Limited support for this hypothesis was found from an analysis of parent questionnaires. More significant, perhaps, in the overall picture of classroom teaching, learning, and home support was the greater conservatism expressed by fathers and by less educated parents in general on matters of educational policy and practice. Along with their conservatism, fathers participated far less than mothers in the affairs of the school.

The fourth hypothesis said that teachers with self-teaching materials in their rooms would regard the materials with favor and would perceive their pupils as making faster progress than teachers not having these materials for classroom use. About half the teachers in the experimental classes gave responses confirming this hypothesis while only one teacher in the control classes with placebo materials saw more progress in reading than in former years. Again the contribution of materials seemed to be a function of what the teacher felt she could manage and cope with in the classroom. It would be interesting to reappraise teacher reactions to the materials under conditions recommended by Bloom (1962) where no first grade teacher would be responsible for more than 15 pupils.

A final word needs to be said about preschool education. In this study, kindergarten experience carried no weight in the regression equation for either the experimental or control groups. This fact is surprising since it suggests that the advantages of kindergarten experience can be offset quickly by direct experience in the first grade classroom. The question may be asked whether kindergarten can and should make a unique educational contribution. Can preschool children be taught strategies for symbolic learning? The work of Fowler (1962), Moore (1960), and Keislar and McNeil (1961) would *suggest so.*

The discovery of the secrets of symbolic learning, the kind that probably can be made by preschool children, is described sensitively by Prince Modupe (1958), born a savage. He recounts with excitement the joy that came from his mastery of the white man's juju, learning the meaning of squiggles on the printed page. Retracing his intellectual discoveries would be valuable for every preschool child who wonders about the magic of books.

In conclusion, this study has examined the role of self-teaching materials in the total complex of classroom learning. Results emphasize a need for better communication channels to link teachers, pupils and parents. Instructional materials are only one component of better learning. Teachers want and need more information about levels of performance among other teachers and how these levels are reached. Parents generally want more information about teaching and learning in their children's schools. And pupils seem to profit more from some teachers than others, even when comparable teaching materials are used. Television is suggested as a communication channel between schools and homes to improve the climate for learning and teaching, and to bring about informed, consistent goals among teachers themselves.

APPENDIX A

HOME AND SCHOOL

A Questionnaire for Parents

Interviewer:____________

Name____________________ Address____________________

Telephone____________________

* * * * * * *

This questionnaire takes only 10 or 15 minutes to fill out.

The questionnaire is brought to your home by a student from Portland State College who plans to become a classroom teacher. This student is one of a hundred who are visiting a thousand homes in the Portland area to learn first-hand how parents feel about teaching as a career. The students believe that by knowing the views and wishes of parents about teaching, they themselves can become better teachers.

Mother and Father should each fill out a questionnaire. Their views about teaching as a career may not be quite the same. Mother and Dad should not talk back and forth about any of the items while they are completing the questionnaire.

The questionnaires are circulated with the full knowledge and approval of your school superintendent.

Responses from all the questionnaires will be compiled by machine under the supervision of Dr. Alma Bingham, Associate Professor of Education, Portland State College. The contents of single questionnaires will not be revealed. In other words, what you say on your questionnaire will be held in confidence.

INSTRUCTIONS

The following 30 opinions have been expressed by many parents at PTA meetings, parent-teacher conferences, and the like. You no doubt will agree with some of the opinions and disagree with others. In other instances you may feel strongly in your agreement or disagreement. Many of you will fall somewhere in between.

To simplify matters, numbers can be used to show how much you agree or disagree with the opinions:

1 = strongly agree
2 = agree
3 = undecided
4 = disagree
5 = strongly disagree

For example, parents would differ in how they feel about this sample item:

Ex.______For efficient teaching, first-grade pupils should be divided into high and low ability groups.

If you strongly agree with the sample item, put a 1 in the space; if you agree, put a 2; if you are undecided, mark a 3, and if you disagree, a 4, etc. If you have any questions about the marking, please ask the interviewer.

Use the above procedure in marking the 30 opinion items which follow.

OPINION SCALE

To the left of each item, in the space provided, write the number which shows your opinion. This is not a test—there are no right or wrong answers.

1 = strongly agree 2 = agree 3 = undecided 4 = disagree 5 = strongly disagree

1.____It seems to me that every public elementary school should have a kindergarten.

2.____I feel that teachers don't give enough attention to suggestions from parents about handling children in the classroom.

3.____In my opinion, school taxes are higher than they need to be.

4.____The methods used at school to teach my first-grade child to read seem to be very effective.

5.____My first-grade child brings home too many things from school.

6.____Teachers are underpaid and overworked.

7.____There should be more Bible study in the public schools.

8.____The elementary schools of today are not as good as they used to be.

9.____Schools are doing very well at keeping the community informed about what goes on.

10.____My first grader is not learning enough from his schoolwork.

11.____Schools should invest more money in films, record players, still pictures, and related teaching aids.

12.____Schools don't pay enough attention to the child's safety on the school grounds.

13.____Judging from the experience of my first-grade child, teachers don't give as much individual help as children need in school.

14.____The teaching methods used today are better than when I went to school.

15.____My first-grade child has become more nervous since he began school.

16.____The school knows better than I how my first-grade child can best be taught.

17.____My first-grade child expects too much help from me with his reading at home.

18.____My first-grade child is well understood by his (her) teacher.

19.____Modern schools have too many frills and not enough study.

20.____Parents should have more opportunities to become better acquainted with teachers.

21.____I think discipline in today's schools is too lax.

22.____Federal aid to education means federal control of education.

1 = strongly agree 2 = agree 3 = undecided 4 = disagree 5 = strongly disagree

23.____I feel the teacher should be permitted to spank unruly first graders.

24.____I prefer a report card which shows how my first grader is doing in comparison to others in his class.

25.____My child really likes to go to school.

26.____First grade children would get more out of school if teachers would assign homework regularly.

27.____I would be happy if my first grader, when grown, would choose teaching as a profession.

28.____The first grade classroom is no place for a man teacher.

29.____A real danger to the small child is the strangers that might be encountered to and from school.

30.____In my opinion, the most important thing for a child to learn in the first grade is:

____

BACKGROUND INFORMATION

31. Which parent are you? (Circle one).

(1) father (2) mother (3) male guardian or stepfather (4) female guardian or stepmother

32. How many school years have you completed? (Circle one).

Grade School	High School	Business or Trade School	College	Graduate or Professional School
8	9 10 11 12	13 14	13 14 15 16	17 18 19 20

33. In which age group do you belong? (Circle one).

(1) 20 - 24 (2) 25 - 29 (3) 30 - 34 (4) 35 - 39 (5) 40 - 44
(6) 45 - 49 (7) 50 - 54 (8) 55 - 59 (9) 60 or older

34. (a) Are you employed? Yes____ No____

(b) What kind of firm or business do you work for?____________________

(c) What is the title of your job?____________________

(d) What kinds of work do you do?____________________

35. Number of children in your home:______

36. How many are older than your first grader?________

37. Is your first grader a: (1)____boy? (2)____girl? (If twins, so indicate______)

38. How much pre-school experience (nursery school and kindergarten) has your first grade child had? (Circle answer that applies).

(1) None (2) One-Half Year (3) One year (4) Two years (5) Over two years

39. How far would you like your first grade child to go in school? (Circle highest level).

Grade School	High School	Business or Trade School	College	Graduate or Professional School
8	9 10 11 12	13 14	13 14 15 16	17 18 19 20

40. How far do you think your first grade child probably will go? (Circle number that applies).

Grade School	High School	Business or Trade School	College	Graduate or Professional School
8	9 10 11 12	13 14	13 14 15 16	17 18 19 20

41. How much interest does your first grade child show in school? (Check one).

____(1) A great deal of interest and enthusiasm.
____(2) Quite a lot of interest.
____(3) Some interest.
____(4) Not much interest.
____(5) Practically no interest.

42. Have you spoken to your first grade child's teacher any time this year?

____(1) Not at all — have not met the teacher.
____(2) Just enough to say "hello."
____(3) A few friendly remarks.
____(4) Informal talk about my first grader.
____(5) Scheduled conference to discuss my first grader.

43. How many PTA meetings do you attend?

(1)___All (2)___Most (3)___Some (4)___Very few (5)___Haven't attended yet

44. What do you think of your school's program for teaching the three R's?

(1)___Excellent (2)___Good (3)___Fair (4)___Poor (5)___Very poor

45. Does your home have

(1)____A T.V. set?
(2)____A piano?
(3)____A record player that plays 33 1/3 r.p.m. records?
(4)____A set of encyclopedias?
(5)____An automobile?

HOME AND SCHOOL

A Questionnaire for Parents

(Second Administration)

Item 1 - 29 were the same in questionnaires completed in November 1960 and May 1961. Below are items beyond 29 as revised for completion in May.

30. In your opinion the most important thing for a child to learn in the first grade is: (If you wish to check more than one, mark your first choice with "1", your second choice with "2", and your third choice with "3".)

______(1) reading, more than anything else
______(2) the three "R's"
______(3) to enjoy school and school work
______(4) self-expression and creativity
______(5) to get along with others
______(6) good study habits
______(7) discipline, respect and good character
______(8) how to use self-help learning materials (teaching machines)

31. How does your child get along at school?

______no problems
______seems to have problems

32. During the past year did your first-grade child bring home:

(a) some combination of phonograph, records, picture viewers and reels, and books? ______yes ______no ______don't know

(b) picture viewers and reels? ______yes ______no ______don't know

(c) only the usual school materials (drawings, books, report cards, announcements, etc.)? ______yes ______no ______don't know

33. If your answer to Question 32, above, is "yes" to part (a) or (b), please answer the following:

(a) How often did your child bring home these items?
______several times a week
______once a week
______several times a month
______once a month
______once or twice during the year

(b) How did the child use the materials?
______for amusement
______to help in school work
______other (explain) ______________________________

____

(c) Does your family have a viewer and picture reels of its own?
______yes
______no

34. How much interest does your first grade child show in school? (check one)

______a great deal of interest and enthusiasm
______quite a lot of interest
______some interest
______not much interest
______practically no interest

35. During this year your first grader's progress in reading has been
______beyond anything I had hoped
______better than I expected
______about as I expected
______less than I expected
______very disappointing

36. How much have you talked with your first grade child's teacher this year?

______not at all
______just said "hello"
______exchanged a few friendly remarks
______informally discussed your first grader
______had one or more conferences about your first grader

37. How many PTA meetings have you attended this year?

______all
______most
______some
______very few
______none

38. What do you think of your school's program for teaching the three "R's"?
______excellent
______good
______fair
______poor
______very poor

39. How much did you read to your first grader before he started to school?
______almost every day
______occasionally
______never

40. How much do you read to your first grader now?
______almost every day
______occasionally
______never

41. What is your occupation? ______________________________

42. In which age group do you belong?

______20-24
______25-29
______30-34
______35-39
______40-44
______45-49
______50-54
______55-59
______60

43. How many school years have you completed?

______8 (grade school)

______9
______10
______11
______12 (high school)

______13
______14 (business or trade school)

______13
______14
______15
______16 (college)

______17
______18
______19
______20 (graduate or professional school)

APPENDIX B

Assistant Questionnaire

We need an assessment of the opportunities to learn which the children in our classrooms had this year. An important determinant of these opportunities is the skill of the teachers as they performed with their children under the conditions you observed. In a sense, we are not asking for a rating of teachers, but of the learning environment they provided.

Please check the appropriate column for each teacher in each category.

	Best Observed (1 or 2)	Excellent	Good	Adequate	Not very Good	Poor	Poorest Observed (1 or 2)
Effectiveness in Teaching: Did the children learn (or just put in time) at school?							
Discipline: Were there rules which the children understood and observed?							
Rapport: Did the children and teacher communicate freely with each other with a good understanding?							
Permissiveness: Did the teacher tend to encourage resourcefulness and initiative of children?							
Enrichment: Were plenty of supplemental learning materials provided, with time to use them?							
Communication: Did the teacher converse frankly and helpfully with you as a research assistant?							

APPENDIX C

Check List (Semantic Differential)

Used by teachers to react to pupils and to parents; used also by assistants to react to teachers. The form below contains instructions for teachers to react to their classes. When used with other groups, instructions were modified accordingly.

Class Check List. This section involves a novel method of evaluation. You may never have encountered anything like it before. It involves these adjectives which are opposites. The assumption is that these adjectives represent dimensions of feeling. Now think about your first grade class this year. How do you feel about it? Look at the first pair of adjectives: ( ) active......inactive ( ). If "active" describes your impression of the class, mark "x" in front of "active"; if "inactive" describes it better, mark it. Proceed through the list checking the one adjective of each pair which you associate with your class. Don't omit any, even though the pair may seem somewhat fanciful or inappropriate such as "stinking..... fragrant."

Now again with the instructions. Check the one word in each pair which you associate most closely with your first grade class. Do not omit any pair.

(__)active..........inactive(__)
(__)weak............powerful(__)
(__)happiness........sadness(__)
(__)excitement......calmness(__)
(__)timid...............bold(__)
(__)good.................bad(__)
(__)slow................fast(__)
(__)forceful..........gentle(__)
(__)friendly......unfriendly(__)
(__)apathy.........eagerness(__)
(__)tender...........tough(__)
(__)hating...........loving(__)

(__)resting.............busy(__)
(__)dominating....submitting(__)
(__)stinking........fragrant(__)
(__)moving.............still(__)
(__)follower..........leader(__)
(__)pain............pleasure(__)
(__)impulsive.....restrained(__)
(__)heavy..............light(__)
(__)dirty...............pure(__)
(__)expressive.....impassive(__)
(__)mild...............harsh(__)
(__)kindness.........cruelty(__)

(NOTE: the 24 pairs of adjectives are arranged in groups of 3, with the first pair being in an "activity" scale, the second pair in a "potency" or "power" scale, and the third an "evaluative" or "good-bad" scale.)

Control Group		Experimental Group	Unit Usage 1	Availability Index 2	Child's Age in Months 3	I.Q. 4	Kindergarten Experience 5	Reading Readiness 6	Semantic Differential on Children by Teachers H-S[1] 7	A-I[2] 8	W-P[3] 9	Teacher's Age 10	Teacher's Experience 11	Teacher's Rank 12	Semantic Differential on Teachers by Assistants H-S 13	A-I 14	W-P 15	Effectiveness 16	Discipline 17	Rapport 18	Permissiveness 19	Enrichment 20	Communication 21	Total 22	Parent Education 23	Parent Occupation 24	Semantic Differential on Parents by Teachers H-S 25	A-I 26	W-P 27	RA_1 28	RA_2 29	RA_3 30	Diff. I Score 31	Diff. Levonian Score 32	Total Reading Achievement Score 33
Unit Usage		1		.48	.14	-.10	-.19	.14	.06	.10	-.06	.05	-.03	-.05	-.02	.17	-.05	.05	.16	.14	.05	.05	-.20	-.02	-.05	.03	.06	-.09	-.08	.13	.19	.15	.05	.12	.17
Availability Index		2			-.08	-.02	-.04	.01	-.05	-.08	-.11	.24	.15	-.25	.04	-.03	.01	-.12	-.07	.00	-.05	.02	-.28	-.13	.09	-.09	-.05	.23	.12	.19	.14	.06	-.16	-.09	.14
Child's Age in Months		3				-.29	.12	.10	-.05	-.03	.18	-.13	-.13	.03	.10	-.10	-.21	-.00	-.04	-.05	-.03	.02	.06	.04	-.05	-.03	-.05	-.13	-.04	-.09	-.04	-.09	-.07	-.08	-.08
I.Q.		4			-.16		.02	.17	-.01	-.06	-.16	.04	.10	-.06	.05	.09	-.06	-.08	-.03	-.06	-.10	-.22	-.02	-.11	.07	.03	-.01	-.01	.15	.21	.23	.29	.10	.25	.26
Kindergarten Experience		5			.06	.08		.02	-.14	-.19	-.01	-.05	.08	-.01	.16	.02	-.08	-.19	-.25	-.17	-.19	-.29	.12	-.15	.16	-.21	-.14	.04	.34	.00	-.04	-.02	-.01	-.02	-.02
Reading Readiness		6			.05	.31	.04		.13	-.07	.06	.14	.06	-.01	-.03	.04	-.01	.04	-.06	.11	.03	.07	-.01	.01	.13	-.10	.13	.08	-.05	.38	.37	.40	.03	.31	.42
Semantic Differential on Children by Teachers	H-S[1]	7			.07	.01	-.06	-.02		.04	-.29	-.01	-.17	.48	-.28	-.41	-.34	.47	.11	.27	.12	.07	.46	.31	.13	.11	1.00	.24	-.58	.08	-.11	-.07	-.15	-.12	-.05
	A-I[2]	8			.07	.09	-.06	.09	.12		.32	-.29	-.65	.25	.44	-.08	-.33	.01	.15	-.05	-.10	.25	-.14	.09	-.05	.04	.04	.44	-.33	-.30	-.25	-.19	.14	-.13	-.26
	W-P[3]	9			.04	.06	.06	-.03	.12	.47		.02	-.18	-.15	.58	-.10	-.14	-.33	-.36	-.35	-.31	.13	-.12	-.17	-.05	.10	-.29	-.27	-.08	-.21	-.09	-.10	.05	-.05	-.14
Teacher's Age		10			-.05	.07	-.20	.24	-.23	.21	-.08		.85	-.51	.20	.23	.28	-.36	-.33	-.05	-.22	-.30	-.35	-.43	.25	-.14	-.01	-.50	.28	.41	.35	.32	-.17	.18	.38
Teacher's Experience		11			.06	.04	-.13	.19	-.15	.14	-.03	.85		-.53	-.04	.40	.46	-.34	-.25	-.08	-.15	-.41	-.25	-.44	.20	-.11	-.17	.43	.47	.43	.38	.33	-.15	.21	.41
Teacher's Rank		12			.07	-.02	.01	-.10	-.23	-.07	.14	-.43	-.30		-.54	-.11	-.19	.91	.73	.71	.74	.60	.87	.92	-.11	.06	.48	-.46	-.80	-.27	-.29	-.25	.01	-.19	-.30
Semantic Differential on Teachers by Assistants	H-S	13			.10	0.02	.03	.03	.67	.05	.03	.04	.22	-.64		-.15	-.45	-.78	-.64	-.74	-.83	-.47	-.53	-.68	.08	-.04	-.28	-.05	.37	-.07	-.05	-.03	.02	-.03	-.05
	A-I	14			.01	.03	-.12	.12	.57	.39	-.10	.19	.08	-.64	.54		.52	-.01	.23	.31	.20	-.10	-.19	-.11	.01	.07	-.41	-.35	.31	.19	.27	.20	-.01	.15	.24
	W-P	15			-.03	.03	-.09	.24	-.01	.17	-.46	.49	.34	-.65	.18	.60		-.03	.01	.21	.28	.17	-.14	-.06	.06	-.00	-.34	.31	.33	.15	.23	.23	.08	.21	.22
Effectiveness		16			.09	-.02	.02	-.11	-.12	.15	.23	-.54	-.45	.94	-.99	-.44	-.59		.85	.87	.91	.68	.78	.96	-.12	.07	.47	-.33	-.79	-.11	-.14	-.14	-.04	-.11	-.15
Discipline		17			.09	-.02	.02	-.11	-.10	.18	.37	-.50	-.38	.90	-.53	-.41	-.66	.96		.77	.86	.57	.49	.81	-.19	.13	.11	-.58	-.67	-.11	-.08	-.10	.02	-.07	-.11
Rapport		18			.09	-.03	-.04	-.03	-.17	.13	.06	-.42	-.37	.89	-.60	-.34	-.44	.92	.90		.92	.72	.57	.82	-.05	.05	.27	-.22	-.54	.04	.03	.01	-.08	-.01	.03
Permissiveness		19			.08	-.02	-.03	.02	-.25	.03	-.03	-.31	-.25	.90	-.62	-.39	-.33	.87	.80	.93		.78	.62	.91	-.14	.10	.12	-.29	-.59	-.07	-.03	-.05	-.00	-.02	-.05
Enrichment		20			.05	-.03	.01	.02	-.25	-.18	-.09	-.39	-.25	.71	-.52	-.37	-.18	.69	.69	.70	.78		.39	.80	-.13	.10	.07	-.16	-.63	-.19	-.11	-.10	.06	-.04	-.14
Communication		21			.06	-.07	.03	-.10	-.62	-.39	-.18	-.22	-.08	.71	-.68	-.76	-.35	.58	.51	.53	.60	.60		.80	-.04	.01	.46	-.24	-.60	-.21	-.26	-.21	-.05	-.16	-.25
Total		22			.11	-.02	-.02	-.07	-.10	.02	.11	-.41	-.27	.97	-.99	-.51	-.55	.95	.91	.91	.89	.72	.66		.15	.09	.31	-.37	-.78	-.22	-.21	-.19	.01	-.13	-.23
Parent Education		23			.00	.17	.34	.20	.00	-.03	-.01	.02	.03	.11	.06	.01	.17	-.11	-.13	-.14	-.07	.05	-.06	-.10		-.56	.13	.23	.11	.27	.27	.21	-.02	.15	.27
Parent Occupation		24			.02	-.14	-.30	-.19	.08	.05	.13	-.04	-.03	.15	-.03	-.04	-.23	.16	.17	.12	.07	-.03	.08	.15	-.61		.11	-.20	-.08	-.26	-.20	-.16	.06	-.10	-.22
Semantic Differential on Parents by Teachers	H-S	25			.01	.01	-.06	.25	.11	-.03	-.23	.45	.38	-.50	.48	.37	.55	-.61	-.61	-.40	-.23	-.25	-.42	-.52	.10	-.17		.24	-.58	.08	-.11	-.07	-.15	-.12	-.05
	A-I	26			.04	.04	-.02	.16	-.17	.44	.44	.49	.37	-.49	.19	.28	.40	-.43	-.35	-.38	-.38	-.37	-.27	-.48	.05	-.05	.46		.39	.28	.17	.21	-.07	.14	.23
	W-P	27			.02	.05	.01	.08	-.06	.46	.45	.34	.24	-.57	.25	.32	.40	-.46	-.40	-.49	-.52	-.47	-.35	-.56	.07	-.04	.26	.93		.19	.22	.20	.03	.17	.22
RA_1		28			.01	.32	.00	.42	-.10	.07	.02	.32	.25	-.20	-.03	.08	.33	-.23	-.17	-.10	-.09	-.00	-.15	-.17	.21	-.24	.26	.30	.25		.77	.69	-.21	.43	.87
RA_2		29			-.06	.36	-.03	.50	-.07	.05	-.02	.33	.21	-.23	-.03	.13	.33	-.27	-.24	-.15	-.13	-.07	-.22	-.23	.24	-.30	.23	.21	.19	.77		.82	.16	.70	.95
RA_3		30			-.01	.36	.06	.47	-.10	.01	-.05	.26	.18	-.21	-.03	.11	.31	-.23	-.21	-.32	-.09	-.01	-.16	-.20	.27	-.33	.19	.17	.16	.70	.86		.42	.93	.93
Diff. I Score		31			-.05	.17	.11	.07	-.01	-.11	-.01	-.02	-.05	-.12	.06	-.00	-.04	-.12	-.13	-.15	-.15	-.15	-.08	-.15	.06	-.12	-.06	-.06	.01	-.09	.27	.47		.64	.17
Diff. Levonian Score		32			.01	.30	.04	.38	-.09	-.01	-.05	.18	.10	-.17	-.03	.08	.22	-.19	-.18	-.12	-.09	-.03	-.13	-.18	.21	-.27	.11	.09	.11	.44	.74	.92	.65		.78
Total Reading Achievement Score		33			-.03	.38	.00	.50	-.09	.05	-.02	.32	.22	-.23	-.03	.12	.35	-.26	-.22	-.14	-.11	-.04	-.19	-.22	.26	-.32	.24	.24	.21	.87	.96	.93	.27	.78	

[1] Happy-Sad. Abbreviation used throughout table.

[2] Active-Inactive. Abbreviation used throughout table.

[3] Weak-Powerful. Abbreviation used throughout table.

APPENDIX D

Matrix of Intercorrelations

VI. LIST OF REFERENCES

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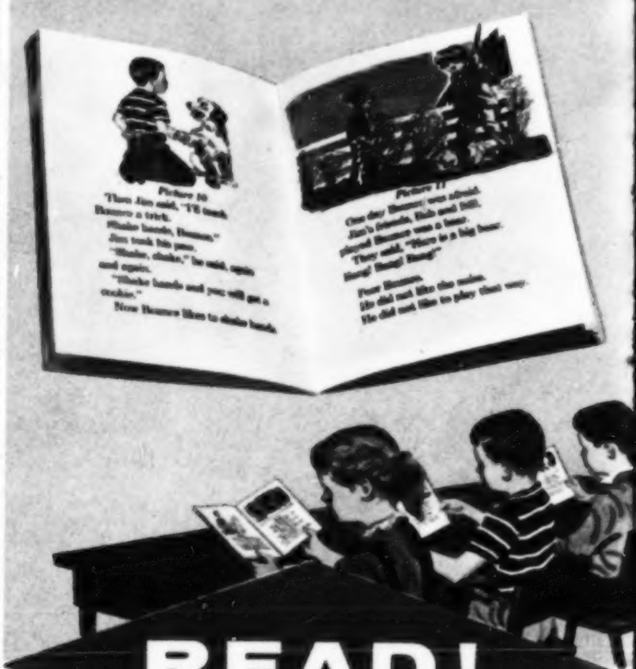

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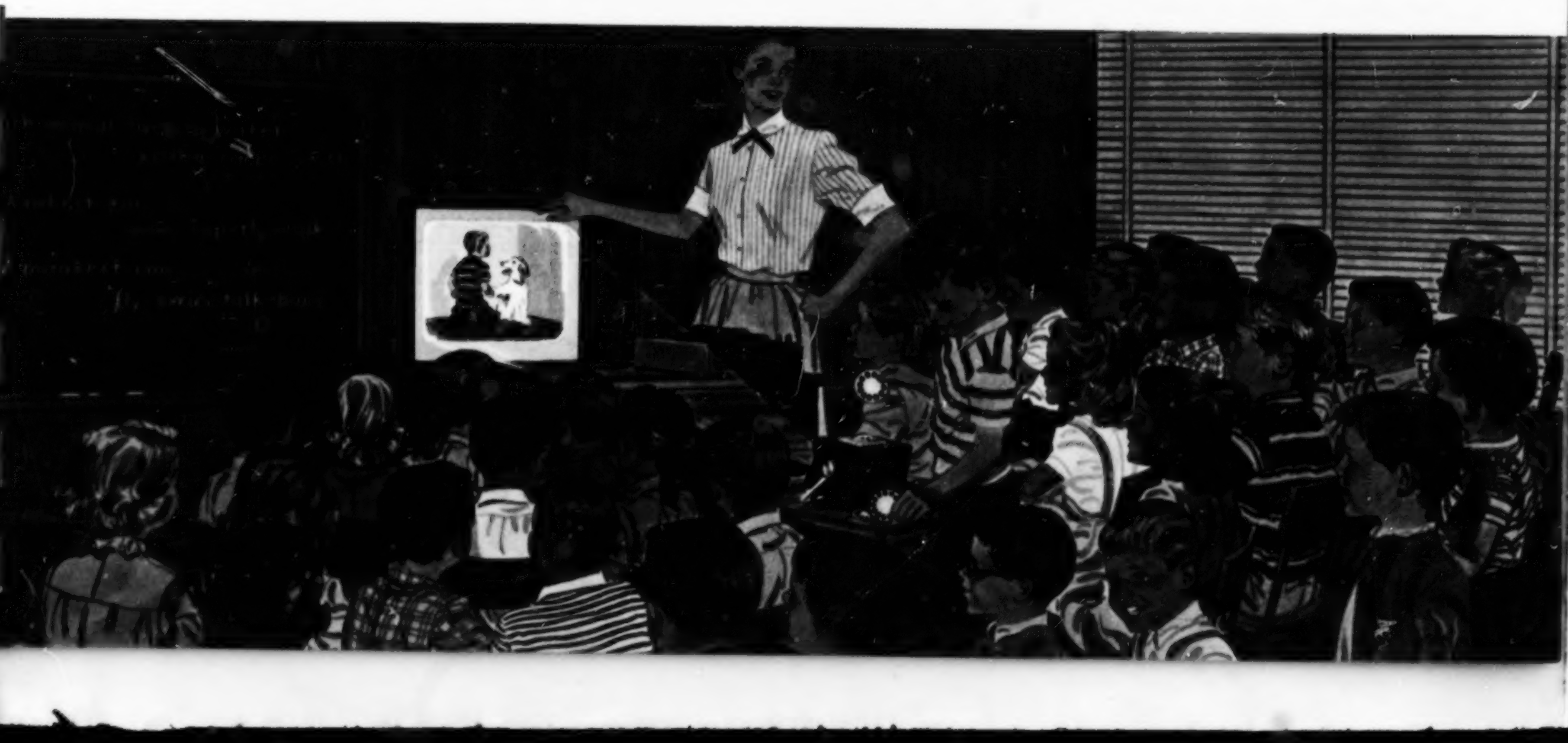

SAWYER'S *Correlated* CLAS

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individual differences in lea

1 Sawyer's classroom units are fully correlated.

Sawyer's materials combine three media—three-dimension pictures, illustrated books, and dramatized recordings. These elements are integrated in the following ways: The recording is a verbatim narration of the reader text; the recording is keyed to and illustrated by View-Master pictures; the printed book illustrations are interpretations of the View-Master three-dimension pictures. The sight-sound-symbol concept, with its varying combinations of classroom presentation, provides motivation and unifies the learning process.

2 Sawyer's materials serve the self-contained classroom.

The concept of the self-contained classroom is rapidly gaining favor in modern education. It provides for a closer and more effective working relationship between the teacher and the pupils. It also enables the teacher to attend to the special needs of the individual pupil. It establishes resources in the classroom for individual and group study. Sawyer's materials have been designed to serve this concept. Their flexibility provides a variety of teaching procedures. Their low cost brings them within the classroom budget.

3 Sawyer's units cover basic study course areas, provide for enriched curricula.

Educational consultants and classroom teachers from leading universities and school systems have assisted in developing the philosophy and content of the Sawyer's Materials. The selection of subjects for the eventual full line of these materials is based upon the following courses of study currently established for primary grade instruction throughout the United States:
SOCIAL — Home, Community Workers, Peoples of Other Lands, Transportation, Industry; SCIENCE AND NATURE— Animals, Plants, Earth, Gravity, Solar System, Space Exploration, Weather, Conservation; ARTS — Graphic, Music, Crafts, Literature. In addition each of the units *combines* materials from two or more of the basic study course areas aiding development of communication skills, broad factual learning and appreciation of the arts.

4 Sawyer's units aid reading improvement.

On his own initiative a child can improve his reading skill with Sawyer's materials. By looking at the three-dimension pictures in the View-Master viewer to get the thread of the story and then by playing the record over and over as the reader text is followed, the child has the necessary sensory ingredients for reading development. Beside their broad application for teaching subject matter and tool skills in the classroom, Sawyer's units will find ready acceptance in reading clinics and classes for exceptional children. They also are very useful for visiting teachers and for independent study by the child at home .

5 Sawyer's units feature View-Master three-dimension.

"Life-like" three-dimension color pictures are integrated into each Sawyer's unit. Any child can operate the View-Master viewer.

The realism of these photographs motivates the pupil to a greater interest in the subject. Further, the pictures provide the first step in the abstraction process which is basic to education. Being only one step removed from the actual objects, the three-dimension pictures bridge the gap between the actual object and the abstract symbol, thereby assisting the child in the all-important process of "learning to learn".

6 Sawyer's materials and equipment are practical and easy to use.

Sawyer's materials provide an efficient, versatile and flexible format for coordinated sight-sound-symbol experiences in the classroom. Each unit can be studied and reviewed by the individual child at his own pace. The teacher can use the units for group presentation and discussion. The related equipment is designed for easy use by the teacher and the pupils.

Fun with Pets
Fun at the Zo
Rhythms
Sounds and Musi
Goldilocks and the Three Bears
The Three Little Pig
The Sleeping Beauty
The Ugly Duckling

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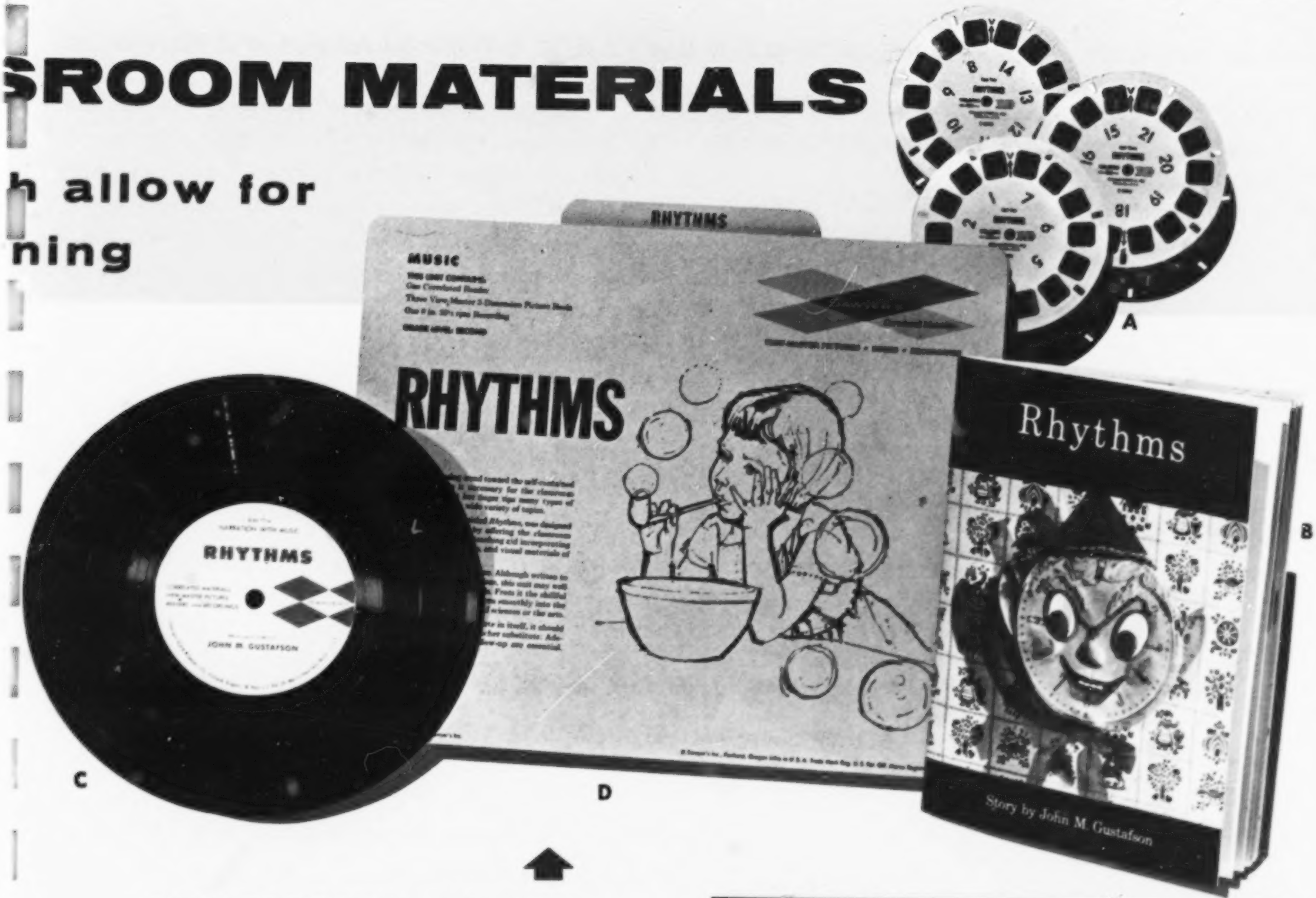

EACH BASIC UNIT INCLUDES THESE ELEMENTS

A. The View-Master Reel

There are seven, 3-dimension, full color photographs on each durable reel, which correlate in picture content with both the Reader and the recording. The pictures are keyed by numbers. Reels are interchangeable in the View-Master Viewer (for individual viewing) and in the View-Master Projector (for group presentation).

B. The Correlated Reader

Richly illustrated in 2-dimension color drawings, each Reader presents the story or lesson, with type size and vocabulary appropriate for the grade level intended. Suggested word games and other aids to understanding are included in each Reader. Additional Readers with picture reels are available in each subject for individuals, groups, or "children's hour" library activity. Readers are also available without reels.

C. The Record

The correlated 33⅓ r.p.m. recordings not only provide a verbatim narration of the Reader text, and key with the View-Master pictures, but also include original vocal or orchestral music interpretations to guide changes of mood. In some titles, the musical portion is in the form of a "little opera"—easily learned songs which dramatize the story.

D. Teacher's Folder-Guide

For easy filing and control by the teacher, the Record, Reels and Reader which comprise each unit are "packaged" in an attractive file folder. A teacher's guide, outlining procedures for use of the materials and suggested related activities is printed on the folder.

RELATED EQUIPMENT

The View-Master Viewer

A sturdy, lightweight optical instrument for individual viewing of the three-dimension pictures. It is easy for even the youngest child to operate. Its low cost permits multiple units for the "library corner" of each classroom.

Projectors

For group instruction, the pictures can be projected non-stereoscopically, television-screen size, with View-Master projectors. This affords opportunity for an informal "huddle" seating arrangement in a darkened area of the classroom, or for use with small groups at work tables.

Deluxe Screenette

This lightweight, portable screen shows a television-size picture. Ideal for work groups or entire class, informal "huddle" seating. "Shadow-box" design minimizes room light problems. Special metallized lenticular surface provides full-brilliance viewing from side to side.

HOW TO GET THE MOST OUT OF SAWYER'S CORRELATED MATERIALS

The unique nature of these materials makes them available for continual classroom use, when—and as—the occasion demands.

They can constitute the resource material of an informal "audio-visual library corner" if the teacher so desires.

They can, on the other hand, be controlled by the teacher and incorporated into a lesson plan.

They can accommodate the entire class, a small work-group or an individual pupil.

The following is a suggested teaching procedure employing Sawyer's Correlated Materials, and provides a "springboard" for the teacher in adapting the materials to suit particular needs.

1. Introduce the unit by projecting the reels on a screen for the whole class, using the Record accompaniment. 2. Discuss the story. 3. Use the books in small reading groups. 4. Call attention to the new words at the beginning of the book. 5. Begin reading—with or without record accompaniment. 6. Use the story as a basis for free art work—drawing, finger-painting, clay work. 7. Teach the accompanying songs. 8. Have the children dramatize the story. 9. Using only the recording, have children listen to the music for rhythm, interpretation and music appreciation. 10. Evaluate. 11. Select other Sawyer's correlated units which are related in purpose.

SOME EXCLUSIVE ADVANTAGES OF SAWYER'S CORRELATED MATERIALS

For the Teacher:

- Materials are compact, easy to file and to use in the classroom.
- They allow for individual differences in learning rate.
- They cover basic study courses and enriched curricula.
- Single units are designed to develop communication skills, factual subject matter and appreciation of the arts.
- Rapid, convenient preview with the View-Master viewer is possible.

For the Pupil:

- Youngsters can use viewers and books with a minimum of teacher assistance.
- The materials stimulate greater interest in learning.
- They aid in home study and self-help.
- They promote perceptual organization in learning.
- They help the pupil to form abstract concepts.
- Their format permits the pupil to teach himself to read, or to improve his reading.
- They develop independent study habits and resourcefulness.

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